

CHAPTER 3

AFFECTED ENVIRONMENT

Introduction

Chapter 3 contains a description of the physical, biological, cultural, economic and social conditions of the Upper Missouri River Breaks National Monument (Monument). It includes a description of the resources and resource uses in the Monument, including the objects identified in the Proclamation (Appendix B) and a list of many of the natural resources on BLM land in the Missouri Breaks (Appendix C). Most of the information in this chapter is summarized from the Analysis of the Management Situation (BLM 2003b) that is available for review at the Lewistown Field Office. The affected environment serves as the baseline of existing conditions from which the impacts of the alternatives may be analyzed. This section provides the information to understand the effects of the alternatives.

Critical Elements

The BLM considers the 14 items listed below as critical elements of the human environment that are subject to requirements specified in statute, regulation, or executive order and must be considered in all environmental analyses. Thirteen of these elements are addressed under the pertinent sections of Chapter 3 (as noted beside each critical element), and if relevant, again in Chapter 4.

The critical element Wastes, Hazardous or Solid is addressed through the appropriate laws and regulations

regarding hazardous materials. Unauthorized storage, treatment, or disposal of hazardous waste on BLM land is prohibited, and environmental conditions are protected as a result of hazardous materials management. Any authorized uses would adhere to federal and state requirements to reduce or eliminate impacts. Procedures in place to address unauthorized use and accidental events minimize, to the extent possible, public exposure and environmental impacts.

Air Quality

Air quality is regarded as good mainly because there are few industries and homes located in the area. No air quality monitoring sites currently exist.

A planning and management process, Prevention of Significant Deterioration (PSD), was introduced as part of the 1977 Amendments to The Clean Air Act. These PSD requirements set limits for increases in ambient pollution levels and established a system for preconstruction review of new major sources. Three PSD classes have been established. Class I allows very small increases in pollution and is designed for pristine areas where almost any deterioration would be significant; Class II allows somewhat larger increases that allow for moderate, well-controlled growth; and Class III allows the air quality to “deteriorate” more with considerable increases in pollutant levels. The State of Montana determines the class. Appendix I lists the federal and Montana ambient air quality standards.

<i>Critical Element</i>	<i>Chapter 3 Section</i>
• Air Quality	Air Quality
• Areas of Critical Environmental Concern	Special Designations
• Cultural Resources	Cultural Resources
• Environmental Justice	Social
• Farm Lands	Soils
• Floodplains	Vegetation – Riparian
• Invasive, Non-native Species	Vegetation – Noxious and Invasive Plants
• Native American Religious Concerns	Cultural Resources
• Threatened or Endangered Species	Fish and Wildlife; Vegetation – Native Plants
• Wastes, Hazardous or Solid	See Critical Elements text
• Water Quality – Drinking/Ground	Water Quality
• Wetlands/Riparian Zones	Vegetation – Riparian
• Wild and Scenic Rivers	Special Designations
• Wilderness	Special Designations

The Monument is within a Class II designation. The nearest Class I area is the UL Bend Wilderness Area about 50 miles east of the Monument. Fine dust that could be generated from 4,888 acres of soil with severe wind erosion hazards is not expected to affect this Class I area.

Climate

The climate is semiarid continental. It is marked by cold winters, warm to rarely hot summers, 12 to 14 inches of precipitation annually, winds primarily from the west, and abundant sunshine.

Average annual precipitation ranges from just under 12 inches in the eastern portion of the Monument to 14 inches in the western portions of the Monument. Snow on the plains more than 12 inches deep is uncommon but not rare. Snow generally falls between November and April, although traces have been reported at Lewistown (south of the Monument) in July and August.

Average precipitation recorded at weather stations in and adjacent to the Monument shows rainfall is concentrated in the period from April through June. Precipitation from July through September is characterized by localized intense thunderstorms that can drop more than an inch of rain or hail on a small area in a few minutes. Low humidity, high temperatures, and moderate-to-strong winds cause rapid loss of soil moisture.

Winter temperatures may be as low as -40° F for short periods with the January mean monthly temperature around 15° F. Summer temperatures as high as 110° F have been recorded with the July mean monthly temperature about 70° F. Temperatures may fluctuate widely during the course of a single day in either winter or summer, and local temperatures may be several degrees different than the average. Growing seasons, defined as the times between the last frost in spring and the first fall frost (temperatures of 32° F), range from 104 to 132 days. The Breaks are subject to intense lightning storms from July through September, often resulting in wildland fires.

Cultural Resources

The Proclamation discusses the importance of the Monument's archaeological and historical resources. The Lewis and Clark and Nez Perce National Historic Trails, teepee rings and abandoned homesteads are also mentioned. The Proclamation states, "Remnants of this rich history are scattered throughout the Monument, and the river corridor retains many of the same qualities and much of the same appearance today as it did then."

Prehistoric Overview

Based on archaeological evidence from the surrounding northwestern plains, it is believed that Ice Age hunters arrived in the region about 12,000 years ago in search of big game such as the now-extinct mammoth and giant bison. The hunters' chief weapon was a thrusting spear tipped with a large stone point. Later, about 8,000 years ago, their descendants used an atlatl, or throwing stick, and a short spear tipped with a smaller stone point than that used previously. Big game animals remained important, but smaller species were also taken along with a variety of wild plant foods. By about 1,500 years ago, bow-and-arrow technology reached the plains, as did the manufacture of pottery.

The prehistoric cultures of the northwestern plains region were organized into small groups of hunter-gatherers. These cultures were largely dependent upon the naturally occurring resources of their environment. Because of environmental and technological limitations, little or no farming was practiced. Subsistence was oriented to resource availability, and campsites were generally located near important, exploitable resources. As the most important resource was the highly nomadic bison, these groups were highly mobile in their settlement patterns.

About 250 to 300 years ago, horses were acquired on the northern plains. The use of horses as a means of transportation and food procurement radically changed the subsistence pattern of the region's inhabitants. No longer were they dependent on the territory in which they lived to survive; the horse allowed them the mobility to exploit new territories and to be more efficient at that exploitation. Thus, even the marginal hunting and gathering cultures evolved into specialized horse-mounted bison hunters by A.D. 1800.

To the first Euro-American visitors, the native groups of the region shared many cultural traits. These traits included high mobility, dependence on horse-mounted bison hunting, similar material culture and religious practices, and a common sign language in spite of many spoken languages and dialects. The Indian tribes inhabiting the region during the 19th century included the Piegan (Blackfeet), Gros Ventre (Atsina), River Crow, and Assiniboin. Frequent visitors to the Monument area also included the Mountain Crow, Shoshoni, Flathead and Nez Perce who passed through the area on buffalo hunts or war parties.

There are 118 known prehistoric sites in the Monument. These prehistoric sites include surface artifact scatters, buried habitation sites, tipi rings, petroglyphs, and buffalo hunting features.

Historic Overview

Recorded history in the area begins with the written records of the early 19th century explorers of European and American origin. The Lewis and Clark expedition camped at numerous locations along the Missouri River in 1805 and 1806. The expedition also described for the first time a large number of the plants and animals found in the region.

Organized fur traders of the Rocky Mountain Fur Company, American Fur Company, and smaller outfits followed the Lewis and Clark expedition into the Missouri River country in the early 1800s. After 1829, the year the American Fur Company established Fort Union at the mouth of the Yellowstone River, several trading posts or forts were built in or near the Monument area, including Fort Piegan near the mouth of the Marias River; Fort McKenzie; Fort Campbell and Fort Lewis near the present city of Fort Benton; and Fort Chardon at the mouth of the Judith River.

By the 1850s, the heyday of the fur trade was beginning to fade due to changes in world textile markets and the scarcity of certain fur-bearing animals in the North American west. However, buffalo hides and whiskey soon replaced beaver skins as the main items of trade in the Missouri River country. In addition to the American Fur Company, a number of trading companies began operating out of Fort Benton during this time, including the firms of I.G. Baker Company and T.C. Power and Bros. In an attempt to reduce conflicts between traders and other immigrants and the American Indian community, the United States established a treaty with various tribes in the area in 1855 (the 1855 Stevens Blackfeet or Lame Bull Treaty).

Steamboats, used on the lower Missouri River for 20 years, were finally able to reach Fort Benton in 1859 due

to the development of shallow draft vessels. The establishment of a port at Fort Benton was one of the most important historic events for central and northern Montana because almost all immigration, commerce, and communication to and from the outside world came through there.

The influx of fur traders, hide hunters, prospectors, businessmen, and settlers into the region eventually caused problems with the native tribes. During the mid-1800s, Blackfeet, Gros Ventre, and Sioux war parties raided outlying settlements and wagon trains with considerable frequency. In order to quell the white settlers' fears about Indian attacks, military posts were established, at Camp Cooke near the mouth of the Judith River in 1866 and at Fort Maginnis near Lewistown in 1880. Army garrisons were also occasionally stationed at Indian agencies, trading posts, and steamboat landings.

In September 1877, the Nez Perce crossed the Missouri River near Cow Island Landing on their flight from the U.S. Army under the command of General Howard. The skirmish at Cow Island on September 23 was the final encounter before their eventual surrender at the Bearpaw Battlefield.

The construction of James J. Hill's St. Paul, Minneapolis and Manitoba Railroad across the HiLine in 1887 changed the entire character of the region. The completion of the Montana Central Railroad and subsequent merger with Hill's company to form the Great Northern Railway in 1889 virtually eliminated steamboat traffic on the Missouri River. The last steamboat traffic between Bismarck, North Dakota, and Fort Benton occurred in 1891.

In 1888, Congress ratified a treaty creating three reservations for the region's Indian inhabitants (Fort Peck, Fort Belknap, and Blackfeet Indian Reservations).



Nelson Homestead

A number of developments followed the coming of the railroad and ushered in the homestead boom of 1910-1918. These included the availability of larger homestead tracts, new dryland farming techniques, new mechanized farm equipment and a mammoth promotional campaign by the railroad companies. Homesteaders came by the thousands, and the region was quickly settled by Germans and Scandinavians from the Midwest, as well as by eastern European immigrants. Times were good during the boom period because the climate was abnormally favorable, and the war in Europe kept the demand and prices for farm products high. However, by the end of World War I, a severe drought had begun, and food prices had fallen drastically. These conditions lasted for several years, and by 1925, one out of every two homesteaders had lost or abandoned his farm and half of the banks in the region had failed.

Beginning in the late 1920s, a canner horse industry emerged in the Missouri River Breaks according to Robert Eigell (1987). Meat packers would pay \$5 a head for horses delivered to the railroad shipping pens (Eigell, R. 1987, 167). While not profitable at this price, it gave rise to the canner horse industry.

During the Great Depression, the U.S. Government provided relief to the residents of the region in a variety of ways. Under the Work Projects Administration, federal funds were available for improving community infrastructure as well as more ambitious projects such as the construction of the Fort Peck Dam that is east of the Monument.

Fifty-three known cultural sites date to the historic period, which is by definition between 1805 and 50 years ago. Most of these sites are related to early agriculture and settlement, but early transportation and the military are also represented. Two additional sites contain both historic and prehistoric components that document two distinct periods of use at the same location.



Gilmore Cabin

Oral histories from long-term residents of the Breaks were recorded in 2003-2004. This local perspective of early agriculture in the Breaks was directed at preserving firsthand accounts of a bygone lifestyle. These firsthand accounts are an interpretive resource for explaining this aspect of the Breaks heritage and address a preservation concern raised during public scoping. These histories expand on written documentation completed by the BLM in 1997-1998 that documented homesteads and other historic settlement along the Upper Missouri National Wild and Scenic River.

Inventory

Of the 173 prehistoric and historic sites that have been recorded within the Monument, 18% (31) have been determined eligible for listing in the National Register of Historic Places, 10% (17) are ineligible for listing, and 72% (125) have no data to confirm their eligibility status. Sites that have unresolved eligibility merit the same protection granted to eligible sites until their eligibility can be resolved. The number and status of sites will continue to change with increased survey and monitoring.

Given the relative size of the Monument, site density is low (one site per 2,168 acres). Even though only a small fraction of the Monument has been systematically inventoried for cultural sites, this low density should be expected. Most of the known cultural sites are within a fairly narrow corridor along the Upper Missouri National Wild and Scenic River. Historic sites within the Monument tend to be related to river travel and trade, as well as agriculture. Based on these site types, the probability of finding them anywhere other than along the river or in land suitable for cultivation in the uplands is low. Prehistoric sites tend to be concentrated along the river as well. This conclusion is the result of two factors: river corridors generally have higher site densities, and the Missouri River corridor and main tributaries have received the predominant amount of cultural resource inventory and attention in the Monument (as it is now defined) since the 1960s. Not surprisingly, the few inventories that have been completed in the uplands have identified relatively few sites.

Accurately gauging the amount of inventory in the Monument is challenging. Many early reports from the 1960s and 1970s focused on the Missouri River corridor, and the archeologists' primary goal was to document archeological sites rather than complete intensive (Class III) cultural resource inventories. Many of the early inventories would be classified as Class II inventories, which implement a sampling strategy. The strategy at the time, however, was based mostly on proximity to the river and landform. Without the political boundaries that we have now, they followed a geographic boundary defined by the river and associated terraces. Examples

of these early surveys include the 1963 Missouri Basin Project's "Archaeological Appraisal of the Missouri Breaks Region," under the direction of Oscar Mallory; and the 1976 MSU study "Missouri River Breaks Area Archaeological and Historical Values," directed by Leslie Davis. Much of the area examined in these two reports overlapped, so the area inventoried in both studies was counted only once. Based on cultural resource inventories completed as part of Section 106 compliance work as well as Section 110 surveys, and counting Class II and Class III inventories, approximately 58,941 acres, or 16%, of the Monument have been inventoried for cultural resources. Excluding the Class II acres attributed to the Mallory and Davis inventories, approximately 30,904 acres (8.2%) have been inventoried.

Tribal Consultation

Previous consultation with tribes indicated that they attach value to the Monument and use certain areas for religious and cultural purposes. At this time, consultation has not resulted in a long list of discrete areas used for traditional purposes; however, in addition to specific areas that have been identified as sacred areas, we know that tribes generally regard certain types of archaeological sites as having cultural and religious significance. These include vision quest sites, monumental/anthropomorphic/zoomorphic rock features, rock art sites, burials, habitation sites with special purpose ceremonial structures, and ceremonial and/or dance grounds. Additional information on tribal consultation is included in Chapter 5.

Fish and Wildlife

The Proclamation discusses the importance of the Monument's wildlife and wildlife habitat. Many of the biological species described in the Lewis and Clark Journals continue to make the Monument their home. The Proclamation states, "The monument boasts the most viable elk herd in Montana and one of the premier big horn sheep herds in the continental United States. It contains essential winter range for sage-grouse as well as habitat for prairie dogs. . . . The cliff faces in the monument provide perching and nesting habitat for many raptors, including the sparrow hawk, ferruginous hawk, peregrine falcon, prairie falcon, and golden eagle. Several pairs of bald eagles nest along the River in the monument and many others visit during the late fall and early winter. Shoreline areas provide habitat for great blue heron, pelican, and a wide variety of waterfowl. The River and its tributaries in the monument host forty-eight fish species, including goldeye, drum, sauger, walleye, northern pike, channel catfish, and small mouth buffalo. The monument has one of the six remaining paddlefish populations in the United States. The river

also supports the blue sucker, shovel nose sturgeon, sicklefin, sturgeon chub, and the endangered pallid sturgeon. . . . The Bullwacker area of the monument contains some of the wildest country on all the Great Plains, as well as important wildlife habitat. During the stress-inducing winter months, mule deer and elk move up to the area from the river, and antelope and sage grouse move down to the area from the benchlands. . . ."

The wildlife species within the Monument are diverse, abundant and widespread. Of the species known to occur in the area pre-settlement, only the grizzly bear, grey wolf, bison and black-footed ferret no longer occur in the Monument. The variety of vegetation along the river and its associated areas provides habitat for the diverse wildlife population. More than 60 mammals, 233 species of birds and 20 species of amphibians and reptiles inhabit these areas. The river itself is home to 48 species of fish ranging from the half-ounce minnow to the 140 pound paddlefish.

Mammals: The area between the river's edge and the mixed forested, sagebrush steppe and agricultural land along the canyon rims provides valuable habitat for several species of mammals. Probably the most significant of these mammals are the black-tailed prairie dog, a BLM-designated sensitive species, and five big game animals: bighorn sheep, elk, mule deer, whitetail deer and pronghorn antelope. Predators including mountain lions and bobcats appear to be doing well in the Breaks portions of the Monument with coyotes doing well throughout the Monument.

Birds: A total of 233 species of birds inhabit the Monument, including the bald eagle, which was delisted as a threatened species on August 8, 2007 and is considered a designated sensitive species by the BLM. In addition, protections provided to the bald eagle under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act will remain in place. An additional 23 bird species found in the Monument have been designated sensitive species by the Montana BLM in cooperation with the Montana Natural Heritage program. The cliff faces provide perching and nesting habitat for many raptors and other birds. The more significant and abundant of the cliff nesters (golden eagle, prairie falcon, and Canada geese) are using some of the cliffs adjacent to the water for nesting. Four species of upland game birds are present in the corridor: gray partridge, sharp-tailed grouse, sage-grouse (a BLM-designated sensitive species), and ring-necked pheasant.

Fish: Forty-eight species of fish are found in this area of the Missouri River and its tributaries. Of these, the pallid sturgeon is on the threatened and endangered list and five are BLM-designated sensitive species: blue sucker, paddlefish, sauger, sicklefin chub, and sturgeon chub. Walleye, channel catfish, and shovelnose sturgeon are also present.

See Appendix R.2 for a complete list of fish, wildlife, herptofauna and avian species found within the Monument.

Several important wildlife species occur within the Monument. They are described below.

Elk

The distribution of elk in Montana changed following settlement by the white man. Early accounts of trappers and explorers indicate that elk were found in all parts of the state with the exception of northwestern Montana. Following settlement, elk numbers decreased, and by the turn of the century only small remnant herds of elk remained in the mountainous areas of Montana and in Yellowstone National Park. Elk were eliminated from eastern Montana. Elk distribution today is the result of transplant efforts and big game management.

Elk were reintroduced to the Missouri River Breaks near the Fred Robinson Bridge in 1951. Thirty-one animals were transplanted from Yellowstone National Park. The population increase and expansion into unoccupied habitat has occurred west to the McClelland/Stafford Ferry, and the Bears Paw herd has moved as far south as the Stafford Wilderness Study Area during severe winters.

Elk are scattered throughout the less rugged habitat within the Monument, generally concentrating in areas with good-to-excellent range condition and adequate water sources. Elk typically use woody draws consisting of ponderosa pine and juniper adjacent to sagebrush/grassland habitat for security and winter cover. Riparian bottoms are used in conjunction with upland areas for forage and security purposes. These bottoms become increasingly important during drought periods when upland reservoirs are dry. Current counts by Montana Fish, Wildlife and Parks (MFWP) estimate 100+ elk on the north side of the river, and 300+ on the south side, within the Monument. Numbers can fluctuate as elk migrate freely between the Bears Paw Mountains and the Missouri River Breaks on the north side of the river, and between the CMR refuge and the Monument on the south side of the river. It is generally believed that the elk are expanding their range. The BLM acres of elk winter range in the Monument are shown in Table 3.1. The elk winter range for the area is displayed on Map G (MFWP 2007).

Deer

Mule deer are the most numerous big game species within the Monument. Mackie (1965) described in detail key mule deer ranges within the Breaks, including the ponderosa pine/juniper type on moderate-to-steep slopes and the sage/wheatgrass type on small ridge tops and

along margins of more extensive ridges. Key habitat in the remaining prairie lands is found primarily along intermittent streams and/or rough Breaks.

Deer in the Breaks are essentially non-migratory; however, they do concentrate on south and southwest facing open slopes and ridge tops during the winter. During winters of heavy snowfall, sagebrush is often the only available forage plant and becomes crucial to the survival of many deer herds. Escape and thermal cover are also important in maintaining deer populations; without sufficient cover, fawns are easily susceptible to predators and adverse weather.

Whitetail deer are less common within the Monument, but they utilize riparian areas along the Missouri River and major tributaries year round.

The BLM acres of mule deer winter range in the Monument are shown in Table 3.1. The mule deer winter range for the area is displayed on Map H (MFWP 2007).



Mule Deer Summer Feeding

Antelope

The pronghorn antelope population was estimated at 2.5 million at its peak before settlement of Montana. Populations have since declined. This can be attributed to disturbance of preferred habitat by human activities.

Habitat frequented by pronghorn antelope varies with the season. Antelope currently occur within the Monument in small numbers year around, primarily in the sagebrush/grassland habitats. The sagebrush ridges and the transition areas between sagebrush and ponderosa pine/juniper provide winter habitat during harsh winter weather, including deep snow and very cold winds. These areas provide protection from the weather and food where snow has blown clear. Herds from 50-300 animals can congregate in these areas during this high stress period.

The BLM acres of antelope winter range in the Monument are shown in Table 3.1. The antelope winter range for the area is displayed on Map I (MFWP 2007).



Pronghorn Antelope

Rocky Mountain Bighorn Sheep

When Lewis and Clark first explored the Missouri River, they noted abundant populations of Audubon's bighorn sheep (*Ovis canadensis auduboni*) in prairies and breaks along the river in what is now Montana (Buechner 1960). This sub-species was driven to extinction in the early 1900s by over-hunting, disease, and competition from domestic livestock (Geist 1971).

Distribution of Rocky Mountain bighorn sheep in Montana has now been extended due to live trapping and transplanting to suitable areas previously occupied. Management agencies began using translocations to return bighorn sheep to parts of their historic range as early as the 1930s (Bleich et al. 1990, Dunn 1996).



Bighorn Habitat – Bullwhacker Area

In 1980, 28 Rocky Mountain bighorn sheep from the Sun River area in Montana were again relocated to the McClelland/Stafford Ferry area of Fergus County. The population introduced at the McClelland/Stafford Ferry

area has since grown and pioneered areas that include both sides of the Missouri River. In August 2004, this population had a minimum of 833 animals: 386 north of the Missouri River and 447 on the south side. The population appears to be healthy and expanding. The BLM acres of bighorn sheep distribution in the Monument are shown in Table 3.1. The bighorn sheep distribution for the area is displayed on Map J (MFWP 2007). The BLM acres of bighorn sheep lambing areas in the Monument are shown in Table 3.1. The bighorn sheep lambing areas are displayed on Map K (MFWP 2007).

Great Blue Heron

Great blue herons are colonial nesters that nest and raise their broods in rookeries. This species will return to the same rookery year to year. Nesting herons are sensitive to human disturbance that can cause them to abandon their eggs or young. Historical data cites at least two rookeries on the Missouri River, but these have been abandoned in recent years.

Fish

Forty-eight species of fish reside in the Missouri River and its tributaries. The pallid sturgeon is endangered and five other species are BLM-designated sensitive species: blue sucker, paddlefish, sauger, sicklefin chub, and sturgeon chub.

Table 3.1
Wildlife Distribution in the Monument

<i>Species</i>	<i>BLM Acres</i>
Elk Winter Range	225,000
Mule Deer Winter Range	362,000
Antelope Winter Range	39,000
Bighorn Sheep Distribution	135,000
Bighorn Sheep Lambing Areas	49,000
Sage-Grouse Winter Habitat	12,000
Prairie Dog Towns	500

The Montana Aquatic Nuisance Species (ANS) Management Plan (Montana ANS Steering Committee 2002) classifies nonindigenous fish species as priority class 4 aquatic nuisance species. This classification indicates that these species are present and that management strategies are being implemented to mitigate impact, control population size, and prevent unintended dispersal. MFWP has management authority for these species.

Herptofauna

Reptiles and amphibians are sensitive to habitat conditions and changes, as well as changes in wildlife community composition and abundance.

Reptiles and amphibians serve as valuable bioindicators of ecosystem health (Lind 1996). Some amphibian populations in Montana have recently undergone, or are currently undergoing, declines and extinctions (Carey 1993, Reichel and Flath 1995). Direct and indirect impacts from a variety of human activities may affect the viability of reptile and amphibian populations in Montana (Joslin and Youmans 1999).

The tiger salamander is the only salamander occurring in the Monument. The woodhouse toad, western chorus frog, and the northern leopard frog all occur in the area. Of concern are the northern leopard frog populations that appear to be in a sharp decline in other parts of Montana. Short-horned lizard, spiny soft-shell and snapping turtles occur and are listed as sensitive species. There is concern that concentration of livestock in soft-shell turtle nesting areas may impact nesting success. Other species could be present within the Monument, but extensive surveys have not been done.

Special Status Species

Special status species include sensitive, state-listed, and federally proposed, listed, and candidate species. See Appendix R.2 for a listing of threatened, endangered or candidate species, and BLM-designated sensitive species within the Monument.

BLM sensitive species are those designated as sensitive by a BLM State Director, usually in cooperation with the state agency responsible for managing the species and state natural heritage programs. Sensitive species are those species that: (1) could become endangered or extinct from a state, or within a significant portion of its distribution; (2) are under status review by the U.S. Fish and Wildlife Service (USFWS); (3) are undergoing significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution; (4) are undergoing significant current or predicted downward trends in population or density such that federally listed, proposed, candidate, or a state-listed status may become necessary; (5) typically have small and widely dispersed populations; (6) inhabit ecological refugia or other specialized or unique habitats; or (7) are state-listed but may be better conserved through application of BLM sensitive species status.

State-listed species of special concern are listed by a state in a category implying, but not limited to, potential endangerment or extinction, and listing is by either legislation or regulation.

Proposed species are species that have been officially proposed for listing as threatened or endangered by the Secretary of the Interior, and a proposed rule to list the species has been published in the Federal Register. Candidate species are designated as candidates for listing as threatened or endangered by the USFWS that have been published in the Federal Register. Listed species are those listed as threatened or endangered by the Secretary of the Interior under the provisions of the Endangered Species Act, and a final rule for the listing has been published in the Federal Register.

Canada Lynx (*Lynx canadensis*) (Threatened Species)

While the lynx is documented in at least one county with land within the Monument, suitable habitat (wet coniferous forest) and its preferred prey base (snowshoe hare) do not occur within the Monument.

Piping Plover (*Charadrius melodus*) (Threatened Species)

While the piping plover is documented in at least one county with land within the Monument, and nesting has been documented downstream on the Missouri River, suitable habitat does not occur within the Monument. Since the mid-1980s, numerous surveys along the UMNWSR have failed to document piping plover presence or nesting.

Grizzly Bear (*Ursus horribilis*) (Threatened Species)

The grizzly bear is documented within the area historically as far back as the Lewis and Clark expedition. The habitat in the surrounding area has been extensively altered and no longer resembles the historic grizzly habitat. The lands within the Monument are suitable for grizzly occupation and residency, but grizzly bears are not expected to occur there based on lack of social acceptance of grizzly occupation of lands between the Monument and grizzly populations.

Gray Wolf (*Canis lupis*) (Endangered Species)

The gray wolf is documented within the area historically as far back as the Lewis and Clark expedition and as recently as the 1950s. As human population increased within the area, lands were converted to farming and livestock production, prey base and secure habitat declined, and increasing conflicts with humans resulted in the wolf's extirpation. The habitat in the surrounding area has been extensively altered and no longer resembles the historic wolf habitat. The lands within the Monument provide the habitat and prey base necessary to support resident wolves. The BLM does not expect wolves to occupy Monument land due to the lack of social acceptance of wolves in the areas between current populations and the Monument.

Black-footed Ferret (*Mustela nigripes*) (Endangered Species)

Status

The black-footed ferret was listed as an endangered species on March 11, 1967. The Monument is near a “non-essential experimental population” of the black-footed ferret (50 CFR Part 17, Vol. 59, No. 159, 42696-715, August 18, 1994). An “essential experimental population” is a reintroduced population whose loss would be likely to appreciably reduce the likelihood of the survival of the species in the wild.

Distribution

The black-footed ferret’s historical range included 12 states (Arizona, Colorado, Kansas, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Texas, Utah, and Wyoming) and the Canadian Provinces of Alberta and Saskatchewan. There is prehistoric evidence of this species from Yukon Territory, Canada, to New Mexico and Texas (Anderson et al. 1986). Currently only reintroduced populations are present in Arizona, South Dakota, Montana, Wyoming, Colorado, Utah, and Chihuahua, Mexico.

Black-footed ferrets depend almost exclusively on prairie dogs and prairie dog towns for food and shelter (Henderson et al. 1969, Forrest et al. 1985), and ferret range is coincident with that of prairie dogs (Anderson et al. 1986).

The Fort Belknap Indian Reservation initiated black-footed ferret reintroductions in 1997 when 23 ferrets were released near Snake Butte in the northwest corner of the reservation, 23.5 miles from the Monument and 36.2 miles from the nearest prairie dog town in the Monument. The Snake Butte prairie dog complex is approximately 2,500 acres in size. The last black-footed ferret release at the Snake Butte complex was in 2000. During the five-year period, 167 kits and 12 adults were released. The last reported ferret survey occurred in 2003 and verified one black-footed ferret.

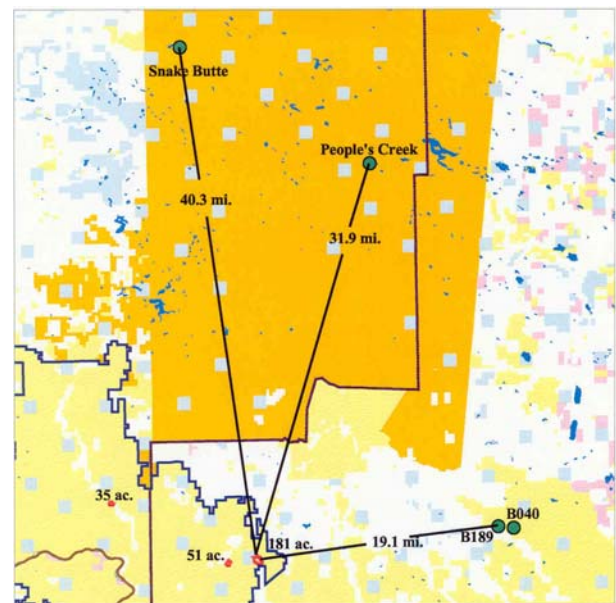
In 1999, 29 black-footed ferret kits were released on the Peoples Creek prairie dog complex (Fort Belknap Indian Reservation). Subsequent to the release, sylvatic plague was identified in the ferret release area. No black-footed ferrets were observed during the 30-day survival survey. The Peoples Creek complex is approximately 5,000 acres in size and is 24 miles from the Monument and 31.9 miles from the nearest prairie dog town in the Monument. Since 1999, there have been no black-footed ferret releases on the complex and no observations of ferrets.

In 2000, black-footed ferrets were released on BLM land in the 40-Complex in south Phillips County. This

complex is approximately 1,200 acres in size at its maximum, but its size varies as sylvatic plague periodically reduces individual colonies to near zero. This black-footed ferret population is designated experimental/non-essential by the USFWS. The spring surveys in 2005 showed 6 adults and 9 kits. The 40-Complex is approximately 17 miles from the Monument and 19.1 miles from the nearest prairie dog town in the Monument.

Figure 3.1 shows the locations of the black-footed ferret introductions described above.

Figure 3.1
Black-Footed Ferret Introductions



Life History and Habitat Requirements

The black-footed ferret is an endangered carnivore with a black face mask, black legs, and a black-tipped tail. It is nearly 60 cm (2 ft) long and weighs up to 1.1 kg (2.5 lbs). It is the only ferret native to North America.

Black-footed ferrets are weasel-like in body shape and form, but are heavier than other weasels. The torso is long with short legs and a long tail. The color of the body is a soft cream color with the ears, chin and throat fading to white. The dorsal portion of the torso is darker than the rest of the body. The legs and tip of the tail are dark brown and a mask of the same color extends in a band from below each eye across the forehead.

Although similar in size and shape to the mink (*Mustela vison*), the much lighter body color and prairie habitat of the black-footed ferret are distinctive. Long-tailed weasels (*Mustela frenata*) are smaller and less robust and do not have a distinctive black mask and feet of the ferret.

Ferrets historically occupied more than 100 million acres of western grasslands but are now reduced to a handful of reintroduction sites in the wild. While programs to breed ferrets in captivity have been successful, efforts to reintroduce captive-bred ferrets into the wild have frequently failed when prairie dog populations crash due to sylvatic plague and other factors. Ferrets themselves can die from plague, and are also susceptible to canine distemper and predation by other carnivores.

Though the black-footed ferret was found over a wide area historically, it is difficult to make a conclusive statement on its historical abundance due to its nocturnal and secretive habits.

Black-footed ferrets do not dig their own burrows and rely on abandoned prairie dog burrows for shelter. It is likely that only large complexes (several thousand acres of closely spaced colonies) can support and sustain a breeding population of black-footed ferrets. It has been estimated that about 40 to 60 hectares of prairie dog colony is needed to support one ferret, and females with litters have never been found on colonies less than 49 hectares (Miller et al. 1996).

Reasons for Decline

Widespread poisoning of prairie dogs and agricultural cultivation of their habitat drastically reduced prairie dog abundance and distribution in the last century. Sylvatic plague, which may have been introduced to North America around the turn of the century, also decimated prairie dog populations, particularly in the southern portions of their range. The severe decline of prairie dogs resulted in a concomitant and near-fatal decline in black-footed ferrets, though the latter's decline may be partially attributable to other factors such as secondary poisoning from prairie dog toxicants (e.g., strychnine) and high susceptibility to canine distemper and sylvatic plague.

Pallid Sturgeon (Endangered Species)

Status

The USFWS determined the pallid sturgeon (*Scaphirhynchus albus*) to be an endangered species under authority of the ESA on October 9, 1990. The pallid sturgeon is one of the rarest fishes in North America. Listing of the pallid sturgeon was important for initiating recovery efforts that included water management changes that may be required to save the pallid sturgeon from extinction.

Distribution

The current distribution of the pallid sturgeon in Montana includes the Missouri River between the mouth of the Marias River and Fort Peck Reservoir, between Fort Peck Dam and the North Dakota border, and in the

112 kilometers of the Yellowstone River below the mouth of the Powder River (Aderhold 1996, Holton and Johnson 1996).

Native or natural populations in Montana are comprised entirely of old, large fish, as there is no evidence of successful reproduction in at least 25 years (Gardner, pers. comm. 2002). The Missouri River population is thought to be comprised of only 50 adult fish and a small number of young hatchery-reared individuals (Gardner, pers. comm. 2002). Within the Monument, the population is found from the terminus of the Upper Missouri River in the Monument (river mile 149) to the McClelland/Stafford Ferry (river mile 102). One of the most obvious detrimental changes in the pallid sturgeon environment was the damming of the Missouri River and several other important tributaries. Information is not available to indicate distribution in Arrow Creek.

Historically, the pallid sturgeon geographic range was similar to the present range except all populations were connected and not fragmented as is the case today. Changes in big river habitat caused by dams and channelization are assumed responsible for the population decline. Nationwide, it is estimated that 36% of historical pallid sturgeon habitat has been eliminated, 40% has been channelized, and the rest has an altered flow regime. Dams have blocked spawning migrations, isolated populations, destroyed rearing and spawning habitats, and altered food supply as well as changing flow, turbidity and temperature regimes (Dryer and Sandvol 1993).

The areas of highest use in Montana and North Dakota appear to be the Yellowstone River below the Intake diversion dam in Montana, and, in North Dakota, the Missouri River from the confluence with the Yellowstone downstream to the headwaters of Lake Sacacawea (Gardner, pers. comm. 2002, Aderhold 1996, Holton and Johnson 1996).

Life History and Habitat Requirements

The preferred habitat of the pallid sturgeon is the bottom of large, swift, turbid, relatively warm, free-flowing rivers (USFWS 1993a; Aderhold 1996). Pallid sturgeon are a large river fish that reside in deep-water areas of the main channel. They prefer sandy substrates and are often associated with subclimax seral stage islands or alluvial bars (Bramblett 1996). It is believed that pallid sturgeon require a spring pulse flow for initiating migrations to upriver spawning areas (Gardner 1995), however, no study has documented this assumption. Once pallid sturgeon spawn, the resulting larvae have a strong tendency to drift great distances downstream over a long period of time (Kynard et al. 1998). This behavior is thought to be one of the limiting factors affecting larval survival. It has been suggested that larval pallids may end up being deposited in downstream

reservoirs and consequently never reach suitable rearing habitat. Gardner (2000) monitored movements and habitat use of hatchery-reared yearling pallid sturgeon, and found that yearling pallid sturgeon used relatively deep channel areas (average = 2.0 m) near the main channel, similar to where adults reside. Pallid sturgeon are long-lived and are thought to spawn at several-year intervals. Females may not reach sexual maturity until 15-20 years old (Dryer and Sandvol 1993). Because of unique biological characteristics, including obligatory lengthy migrations and larval drift distances, a high habitat specificity and late sexual maturity, pallid sturgeon is a species vulnerable to extirpation.

Reasons for Decline

Altered flow regimes caused by the damming of large rivers have resulted in the decline of pallid sturgeon populations in Montana. The Yellowstone and the Upper Missouri (above Fort Peck Dam) exhibit a somewhat natural hydrograph but have altered flow regimes because of the smaller dams in the system. The unregulated Yellowstone River at Sidney has 30% of its runoff controlled by Yellowtail and Tongue River Dams (Koch et al. 1977). Lake Sakakawea has pallid sturgeon rearing areas. The Upper Missouri River system has a compressed hydrograph above Fort Peck Reservoir. A portion of the runoff is regulated by Canyon Ferry and Tiber Dams, and to a lesser amount from four other dams in the system. Like Lake Sakakawea, Fort Peck Reservoir also has pallid sturgeon rearing areas. The complete regulation of the Missouri River by Fort Peck Dam has caused dramatic changes in flow, temperature and turbidity in this 330 kilometer reach. These changes are sometimes tempered during high runoff period of the warm and turbid Milk River that enters 16 kilometers downstream from Fort Peck Dam. Pallid sturgeon also face hybridization threats with the native shovelnose sturgeon.



Pallid Sturgeon Range near the James Kipp Recreation Area

Efforts are now being directed at restoring the river to a more normal condition. Through an informal agreement,

the U.S. Bureau of Reclamation (BOR) has agreed to provide a dominant discharge spring pulse out of Tiber Reservoir every four to five years for Missouri River fish migrations. This could help the Upper Missouri River flood-dependent riparian vegetation.

The future for pallid sturgeon recovery may continue to be uncertain even after positive changes have been implemented because pallid sturgeon populations are so depleted and the newly stocked fish will take at least 15 years before the females first reach sexual maturity and begin to spawn. Therefore, it is important to realize that immediate evaluations are impractical and recovery will take a long-term commitment.

Greater Sage-Grouse (Sensitive Species)

Status

Greater sage-grouse is a BLM Montana Designated Sensitive Species that was petitioned for listing under the Endangered Species Act, as a threatened species in 1999. In September 2003, the USFWS withdrew the listing because new information indicated that the threats to the species included in the proposed listing were not as significant as earlier believed (USFWS 2005). The USFWS found that declines in local population numbers at specific locations are not supported by statewide estimates throughout the range which suggest that the continental population has not changed significantly in the past decade.

Greater sage-grouse have decreased in numbers but still inhabit the areas they have occupied for decades. Grouse populations in marginal areas of their range have been drastically reduced or eliminated. Sage-grouse are closely associated with sagebrush. In areas where sagebrush has been eliminated, the sage-grouse has also been eliminated.

Sage-grouse, considered sensitive and a species of potential concern, have decreased in numbers throughout their range (Montana Sage Grouse Work Group 2005); however, in many areas outside the Monument sage-grouse populations have stabilized or increased in recent years. Faltering sage-grouse populations can be attributed to a number of different factors. Habitat fragmentation and habitat condition are the primary factors that the BLM can manage or manipulate.

In eastern Montana, where close interspersions of wintering, nesting, and brood-rearing habitat rarely requires large seasonal movements, sage-grouse are essentially non-migratory. The importance of sagebrush to sage-grouse is well documented. The seasonal habitats discussed below are important for survival of sage-grouse (Montana Sage Grouse Work Group 2005).

It is thought by local (BLM and MFWP) biologists that greater sage-grouse historically occupied much of the sagebrush habitat in and around the Monument, but extensive surveys were never conducted to confirm this until recently (2005).

Breeding is limited within the Monument, but the habitat provides some nesting and winter habitat. Sage-grouse areas south of the Missouri River within the Monument are remnants of sagebrush stands that have been extensively farmed. The birds are dependent on these remaining patches of sagebrush year round. There are currently two sage-grouse leks on Monument lands with 16 additional leks within two miles of the Monument. The lands within the Monument provide about 12,000 acres of winter habitat (Map L). Trends are mixed between the different leks, with one Monument lek being new (2005), or only newly discovered.

Life History and Habitat Requirements

Breeding Habitat

Strutting grounds, or leks, where breeding actually occurs, are key activity areas and most often consist of clearings surrounded by sagebrush cover. Findings from research in central Montana reported a sagebrush canopy cover at feeding and loafing sites near leks of 20% to 50% with an average of 32% (Montana Sage Grouse Work Group 2005).

Nesting Habitat

Sage-grouse invariably prefer sagebrush for nesting cover, and quality of nesting cover directly influences nest success. Successful nesting requires concealment provided by a combination of shrub and residual grass cover. Sage-grouse most frequently select nesting cover with a sagebrush canopy of 15% to 31%. Research findings in central Montana suggest that about 67% of nests occur within 2 miles of a lek (Montana Sage Grouse Work Group 2005). A recent and as yet unpublished graduate study in northcentral Montana by Brendan Moynahan (Moynahan 2004) suggests that 60% of nesting occurs three miles or more from breeding leks (Moynahan, pers. comm. 2005).

Brood-Rearing Habitat

Research in central Montana indicated that sage-grouse broods prefer relatively open stands of sagebrush during summer, generally with a canopy ranging from 1% to 25%. As palatability of forbs declines, sage-grouse move to moist areas that still support succulent vegetation (Montana Sage Grouse Work Group 2005).

Winter Habitat

Sage-grouse generally select relatively tall and large expanses of dense sagebrush during winter. Wintering

areas in central Montana include sagebrush stands on relatively flat sites with a 10% to 30% sagebrush canopy coverage with a normal height relative to site potential. Areas exceeding 30% may provide important habitat during deep snow events (Montana Sage Grouse Work Group 2005). Table 3.1 shows the BLM acres of winter habitat in the Monument. The sage-grouse winter habitat for the areas is displayed on Map L (MFWP 2007).

Reasons for Decline

Extensive farming practices and sagebrush control outside the Monument has reduced the overall habitat available in the areas around the Monument. In addition, oil and gas development, road development, and traffic associated with this development along with recreation have all reduced the amount and suitability of sage-grouse habitat.

Black-tailed Prairie Dog (Sensitive Species)

Status

In the 2002 candidate notice of review, the USFWS found that a listing proposal for this species was still warranted but precluded by higher priorities, and assigned a listing priority number of 8. The USFWS did not update a finding with regard to the black-tailed prairie dog in the 2003 candidate notice of review. The USFWS has since received significant new information about this species from the National Wildlife Federation, Forest Guardians, and the States of Arizona, Colorado, Kansas, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Texas, and Wyoming. The USFWS published its findings in August, 2004, in which it stated that listing under the Endangered Species Act was not warranted (USFWS 2004).

Distribution

Lewis and Clark, while on their famous journey up the Missouri River in 1804, noted that this "wild dog of the prairie . . . appears here in infinite numbers." In the past, poisoning and loss of habitat reduced most prairie dog colonies to small, fragmented colonies.

Prairie dog colonies within the Monument are small, the largest being 181 acres. Many are widely scattered, and many are expanding. Possibly due to the ongoing drought, many of the towns have been expanding within the confines of available habitat, and new towns have been established along the Missouri River. This has created conflicts of use, as prairie dogs alter the vegetation and habitat, and impact private lands and resources. Currently the State of Montana has established a season for recreational shooting on BLM land, but most prairie dogs are protected primarily by their isolation and distance from public roads. Since 2000, one small isolated prairie dog town on the

Missouri River died out, unconfirmed, but likely due to plague.

About 500 acres of prairie dog towns lie within the Monument (Table 3.1 and Map M).

Habitat Requirement

Prairie dog colonies within the Monument occur on relatively flat or rolling topography with little or sparse brush component, commonly on flat benches next to creeks or the river, or flat benches above the Missouri River. The two colonies in Phillips County occur in the upper portion of the Breaks several miles from the Missouri River. Prairie dog dispersal is usually limited to approximately 3 miles (5 kilometers) or less, and individuals dispersing from home colonies generally move into an established colony rather than attempting to initiate a new colony (Garrett and Franklin 1988, Hoogland 1995). These limitations could restrict recruitment of animals into small and declining isolated populations and favor the re-establishment of individuals in nearby, recently abandoned colonies over the establishment of new, more distantly located colonies.

Reasons for Decline

In the past, poisoning and loss of habitat reduced most prairie dog colonies to small, fragmented colonies. Together with plague, continued poisoning and unregulated shooting, the destruction and adverse modification of habitat could act on fragmented populations to threaten the continued existence of the species.

Mountain Plover (Sensitive Species)

Status

The mountain plover (*Charadrius montanus*) was designated a category 2 candidate species on December 30, 1982, (47 F.R. 58458) meaning that the species may be declining but more information was needed. The USFWS elevated its status to category 1 candidate in the 1994 Annual Candidate Notice of Review (59 F.R. 58982), meaning that listing was warranted, but precluded by higher priority species. In 1996, the USFWS did away with candidate categories 2 and 3, redefining candidate species to include only former category 1 candidate species (61 F.R. 64481). The mountain plover was retained as a candidate species in the 1997 status review (62 F.R. 49298). The species was petitioned for listing as threatened on July 7, 1997. Due to its candidate status, no 90-day finding was required in response to this petition.

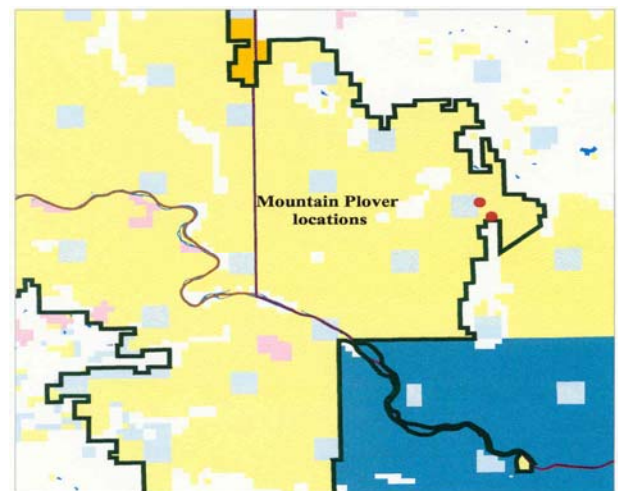
The mountain plover was proposed for listing as a threatened species in 1999. In September 2003 the

USFWS withdrew the listing, because new information indicated that the threats to the species included in the proposed listing were not as significant as earlier believed. The USFWS found that declines in local population numbers at specific locations are not supported by statewide estimates throughout the range which suggest that the continental population has not changed significantly in the past decade. New information made available this year from many state and federal agencies indicated that occupied black-tailed prairie dog habitat, that provides nesting for plovers, is more abundant than previously believed. In addition, a variety of conservation efforts initiated for mountain plovers and other species of the high plains in several western states benefit the mountain plover.

Distribution

Mountain plovers have been documented nesting on two prairie dog towns within the Monument in south Phillips County (Figure 3.2). Surveys on all other prairie dog towns have failed to locate nesting birds. Based on presence of trees, excess slope, and topography, the remaining prairie dog towns have a low probability to provide suitable mountain plover nesting habitat.

Figure 3.2
Mountain Plover Locations



Life History and Habitat Requirement

In Montana, there is compelling evidence that mountain plovers are dependent on active prairie dog colonies for nesting (Dinsmore 2000). Mountain plover selectively use black-tailed prairie dog towns (*Cynomys ludovicianus*) for breeding, nesting, and feeding (Knowles et al. 1982, Knowles and Knowles 1984, Olson 1985, Olson and Edge 1985, Olson-Edge and Edge 1987, Dinsmore 2000, Dinsmore 2001, Knowles and Knowles 2001). However, not all prairie dog towns offer suitable habitat for mountain plovers, mostly due to topographic incompatibility. In addition, there are

habitats other than prairie dog towns that provide nesting, feeding and breeding habitat for mountain plover in Montana. Knowles and Knowles (2001) conclude that “based on historical notes and contemporary observations, viable populations of mountain plovers are probably dependent upon extensive areas of black-tailed prairie dog colonies.”

Reasons for Decline

Any effort to control prairie dogs or take actions that are detrimental to prairie dogs on existing nesting areas could impact mountain plovers. Mountain plovers avoid steep topography and above-ground structures, natural or man made, that provide roosting for raptors. Roads and associated traffic have potential to kill adults and young through strikes.

Migratory Birds (Includes Several Sensitive Species)

Status

The Migratory Bird Treaty Act and Executive Order 13186 describe the responsibility of federal agencies to protect and manage migratory birds and the habitats they require. As a group they have no specific status under ESA. The 1988 amendment to the Fish and Wildlife Conservation Act mandates the USFWS to “identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act of 1973.” These are the priority species identified by USFWS and considered by BLM in authorizing land management activities.

At least 228 species of migratory birds could occur in the Monument during part of the year, including 17 species of raptors.

Distribution

No comprehensive, broad-scale inventories have been completed that would document migratory bird occurrences or densities area-wide. Aerial and ground surveys for nesting raptors were conducted in 2004, covering about half of the planning area. Twenty-nine active nests were located.

Habitat Requirement

The UMNWSR and associated riparian habitat has been recognized as a major migration route and stopover for many migratory species. All habitat types within the Monument provide habitat for some migratory species, but densities and distribution can vary by year and habitat type.

Bald Eagle (Sensitive Species)

Status

In 1967, the Secretary of the Interior listed bald eagles south of the 40th Parallel as endangered under the Endangered Species Preservation Act of 1966.

Following enactment of the Endangered Species Act of 1973, the USFWS listed the species as endangered throughout the lower 48 states, except in Michigan, Minnesota, Oregon, Washington, and Wisconsin where it was designated as threatened. The species was never listed as threatened or endangered in Alaska or Canada because populations there have always been healthy.

The bald eagle was reclassified as a threatened species in 1995. On July 6, 1999, the USFWS proposed to remove the bald eagle from the list of threatened and endangered species. On August 8, 2007, the bald eagle was delisted (72 FR 37346).

Distribution

The bald eagle ranges throughout much of North America, nesting on both coasts from Florida to Baja California, Mexico in the south, and from Labrador to the western Aleutian Islands, Alaska in the north.

Life History and Habitat Requirements

Bald eagles are long lived. The oldest bald eagle known in the wild was reported near Haines, Alaska, as 28 years old (Schempf 1997). It is presumed that once bald eagles mate the bond is long-term, though documentation is limited. Variations in pair bonding are known to occur. If one mate dies or disappears, the other will accept a new partner. Eagles feed on a variety of items with primary prey consisting of waterfowl and fish. Eagles also feed on carrion and small mammals including jackrabbits (BLM 1986a).

Bald eagle pairs begin courtship about a month before egg-laying. In their southernmost range in North America (Mexico, south Texas and Florida), courtship occurs as early as September; in the northernmost range (Alaska and Canada), as late as May. Nest building, courtship and egg-laying usually take place in February through the middle of April. Hatching and rearing of young generally takes place from early May to mid-August. Fledging generally occurs from mid-June through mid-August (BOR 1994). The nesting season can encompass about 6 months. Incubation lasts approximately 35 days and fledging takes place at 11 to 12 weeks of age. Parental care may extend 4 to 11 weeks after fledging (Wood et al. 1998). The fledgling bald eagle is generally dark brown except the underwing linings that are primarily white. Between fledging and adulthood, the bald eagle’s appearance changes, with feather replacement each summer.

Young dark bald eagles may be confused with the golden eagle (*Aquila chrysaetos*). The bald eagle's distinctive white head and tail are not apparent until the bird fully matures, at 4 to 5 years of age.

As they leave their breeding areas, some bald eagles stay in the general vicinity while most migrate for several months and hundreds of miles to their wintering grounds. Eagles seek wintering (non-nesting) areas offering an abundant and readily available food supply with suitable night roosts. Night roosts typically offer isolation and thermal protection from winds. Carrion and easily scavenged prey provide important sources of winter food in terrestrial habitats far from open water. Young eagles may wander randomly for years before returning to nest, usually in or close to natal areas.

Nests are generally located in forest stands larger than 3 acres with a moderately open canopy. Nests are generally located within 1.6 kilometers (one mile) of bodies of water that are generally at least 32 hectares (80 acres) in size. Territories and nests are usually used repeatedly, some for over 80 years (Magaddino 1989). Bald eagles usually nest in trees near water, but are known to nest on cliffs and (rarely) on the ground. Nest sites are usually in large trees along shorelines in relatively remote areas that are free of disturbance. The trees must be sturdy and open to support a nest that is often 5 feet wide and 3 feet deep. Adults tend to use the same breeding areas year after year, and often the same nest, though a breeding area may include one or more alternate nests.

Wintering habitat includes perching and roosting sites located near open water or in areas with ample carrion (e.g., big game winter range) and are not as sensitive to human disturbance as nest sites; however, continual disturbance in wintering areas may result in displacement. In Montana, wintering eagles are associated with unfrozen portions of rivers, along with upland areas where they feed on ungulate carrion, game birds, and rabbits (Montana Bald Eagle Working Group 1994).

Like nests, roost and perch sites may be used over many years. These sites usually consist of large trees with horizontal branches. Perches provide good views, usually near feeding areas, and may be occupied by one to several hundred eagles. Roosts provide thermal protection and may be several miles from feeding areas (Magaddino 1989). No large communal roosts have been discovered in Montana (Montana Bald Eagle Working Group 1994).

Reasons for Decline

Declines in bald eagle populations have been linked to poisoning, human disturbance, loss of nest trees (cottonwoods), shooting, and use of the pesticide DDT.

Occurrence

Nine active bald eagle nests are known to occur in the Monument, as follows:

- The Evans Bend nest site is located approximately 11 kilometers (7 miles) downstream of Fort Benton.
- The Lundy nest is approximately 13.7 kilometers (8.5 miles) upstream of the mouth of the Marias. It was established in 2006 but did not fledge any young.
- The Senieurs Reach nest is approximately 7.25 kilometers (4.5 miles) upstream of the mouth of the Marias. It was established in 2006 but did not fledge any young.
- The Loma nest site is approximately 1.6 kilometers (1 mile) southeast of the town of Loma.
- A second nest less than 1/4 mile away was in use until 2005, when adults moved to the other Loma nest site.
- The Little Sandy East nest site was observed in 2004 approximately 7.25 kilometers (4.5 miles) downstream from Coal Banks Landing. It was assumed to be an alternate nest location for the Little Sandy site, but successfully fledged eagles in 2006.
- The Little Sandy nest site is located approximately 8 kilometers (5 miles) downstream of Coal Banks Landing.
- A nest was initiated in 2004 at the confluence of the Judith and Missouri Rivers, with successful recruitment in 2006.
- A new nesting site was established downstream on Cow Island in 2005 and was successful in 2006.

Suitable habitat may exist to support additional bald eagle nests on the river, but as cottonwood galleries age and are not replaced, additional nesting sites may be limited or reduced in the future. In addition to the active nest territory, eagles are known to winter in the Monument, feeding primarily on fish, carrion and waterfowl.

Geology

The Proclamation discusses the importance of the geology in the area. The Proclamation states, "The monument is covered with sedimentary rocks deposited in shallow seas that covered central and eastern Montana during the Cretaceous period. Glaciers, volcanic

activity, and erosion have since folded, faulted, uplifted, and sculpted the landscape to the majestic form it takes today.”

The Monument is a triangular wedge of land lying between three island mountain ranges. At the north apex of the triangle is the Bears Paw Mountain Range, on the east side are the Little Rocky Mountains, and to the west side are the Highwood Mountains. All of these ranges are places where magma rose up from the mantle penetrating a 2-mile thick layer of sedimentary rocks at various times during the Tertiary period. Figure 3.3 is a geologic map of northcentral Montana.

Figure 3.4 shows the sedimentary formations exposed along the Missouri River channel, which is the central geographic feature of the Monument. The Little Rocky Mountains are made up of plutonic igneous rock types while both the Bears Paw and Highwood ranges resulted from volcanic eruptions forming fine grained rocks near, or on the surface. The Bears Paw Mountains were covered by extensive heavy basalt layers. Over time, these slid away from the uplift deforming the near surface sedimentary rocks. The Bears Paw Mountain Arch is surrounded by a jumble of tilted sections of rocks that are covered with slightly younger volcanics. Between the Highwood and Bears Paw Mountains, sedimentary rocks are tilted and shot through by radiating dikes that, when eroded, form spires and walls of dark igneous rock that contrast with the lighter sedimentary layers they intrude. The gravity sliding produced a lot of the thrust faulting that formed the structural traps for natural gas that is discussed in the oil and gas section of this chapter.



Breaks Geology

Following the mountain building events, the volcanic cones and much of the sedimentary rocks surrounding the Bears Paw Mountains were stripped away by erosion. Pediment and terrace deposits were formed in the foothills from the eroded material. During the last glacial age (50,000 to 10,000 years ago) continental ice sheets descending from the north were deflected east and west by the Bears Paw Mountains. The ice dammed the northward flow of the Missouri River and resulted in the

formation of a new channel draining to the east into the Musselshell Valley and thence south to the Gulf of Mexico. It is this younger portion of the Missouri River channel that forms the area known as the Missouri Breaks.

Caves and Karst Resources

The Federal Cave Resources Protection Act of 1988 requires the BLM to document any cave or karst resources on BLM land. The geology within the Monument does not lend itself to the formation of caves, and there are no known sites within the Monument.

Locatable Minerals

Mineralization has been found associated with the veins and fracture zones near the margins of igneous dikes and intrusions. Over the years, the U.S. Geological Survey and the former U.S. Bureau of Mines examined various prospects and reported finding deposits that contain copper, lead, zinc, zeolites, uranium, niobium, zirconium, thorium, titanium, sulfur, tantalum, beryllium, lanthium, cerium and vermiculite. These occurrences are estimated to be unrecoverable and marginal in value. Minor amounts of placer gold were discovered by prospectors in gravel beds of coulees flowing out of the mountain areas. These were soon depleted and abandoned.

Some unique exposed igneous intrusions are up to a city block in size. The rock type resembles the material associated with the diamond-bearing kimberlite diatremes found in Africa and other places in the world. True kimberlite was found in Phillips County, but no diamonds have been discovered. Diamonds are extremely rare in outcrops of kimberlite. Thirty-two lode claims are located on these features (see diatremes on Figure 3.3). Surface sampling for indicator minerals of potential diamond-bearing zones and geophysical mapping have been conducted at these claims over the years, but no drilling or bulk sampling has been conducted. A recent discovery of diamonds in the Northwest Territory of Canada has increased interest in these deposits; however, any future plans to further explore the potential of these claims would be subject to the adjudication of valid existing rights that existed before the Proclamation date. No production of hardrock minerals is presently occurring. Table 3.2 lists unpatented mining claim locations.

Figure 3.3
Geology of Northcentral Montana

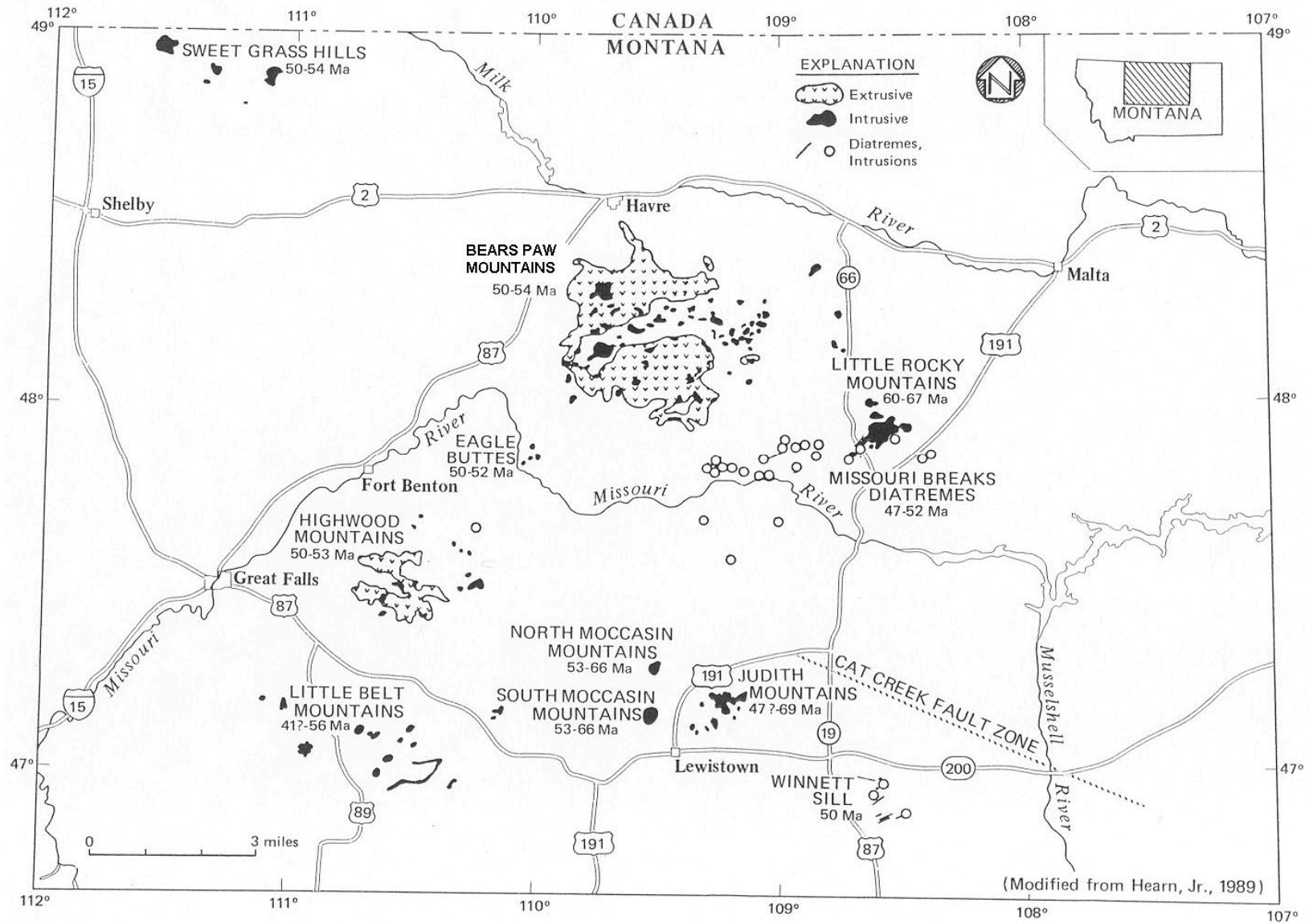


Figure 3.4
Geologic Formations

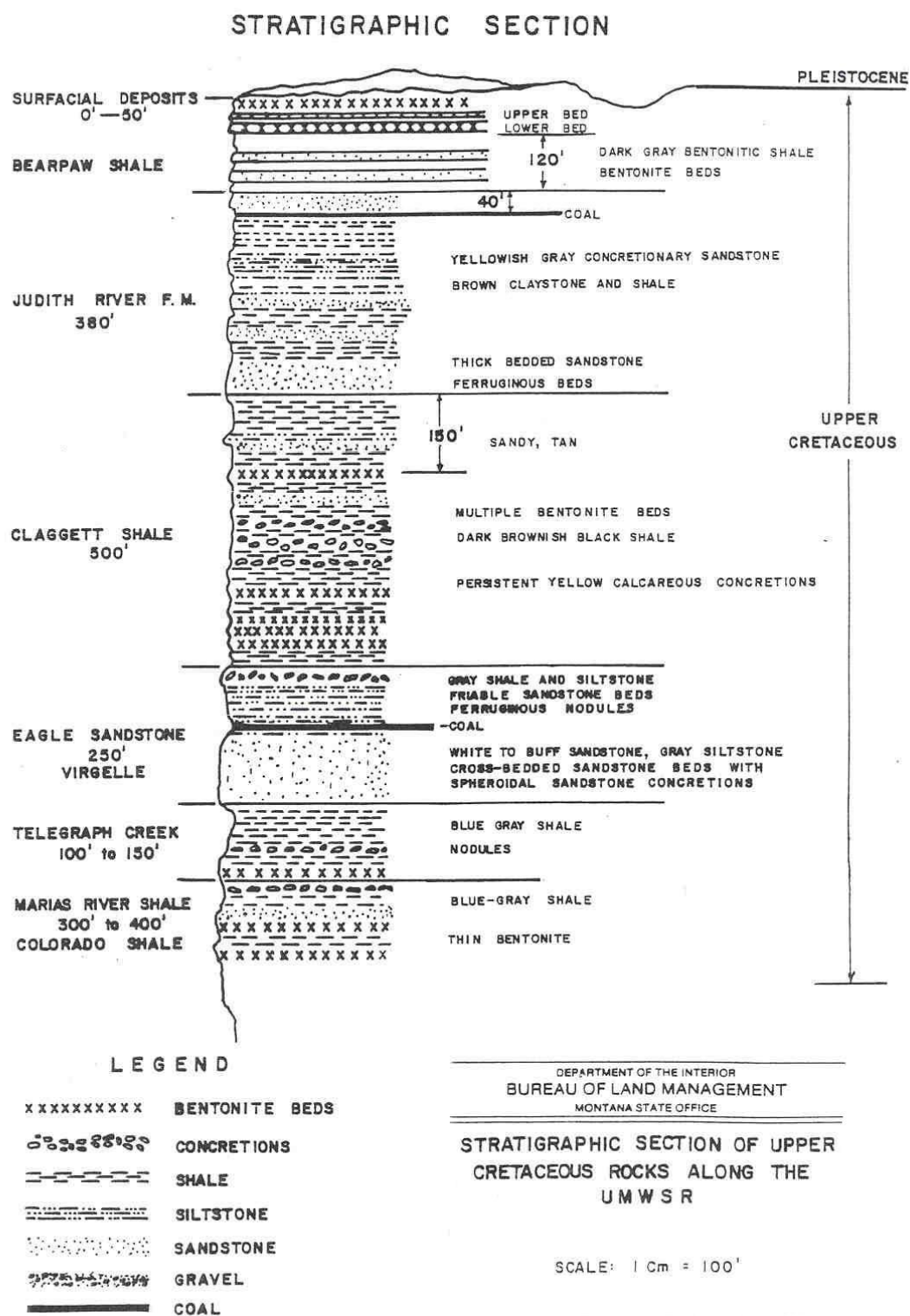


Table 3.2 Unpatented Mining Claims	
<i>General Location of Claims</i>	<i>Number of Claims</i>
Blaine County	
T24N R19E	6
T24N R20E	7
T24N R21E	9
T24N R22E	2
T25N R21E	3
T25N R22E	2
Phillips County	
T24N R22E	2
T24N R23E	1
Total	32

Source: (BLM 2007).

Solid Leaseable Minerals (Bentonite, Expandable Clay, Coal)

Three formations are known to carry thick layers of bentonite in the area: the Colorado, Claggett, and Bearpaw Shales (Figure 3.4). Near the top of the Colorado Shale, bentonite has been exposed in the Bears Paw Mountains. The beds are located in the Marias River Formation and range upward to 18 inches thick. The younger Claggett Shale Formation also contains bentonite beds in the lower one-fifth of the formation. Similarly, these have a maximum thickness of 18 inches. The youngest formation, Bearpaw Shale, contains bentonite beds in the lower one-third of the 1,000-foot section. Exposures of bentonite are found along Sand Creek in Section 5, T25N R17E. In the Al's Creek area in Section 32, T26N R20E, several beds appear to be at least two feet thick.

No bentonite mining activity is presently occurring in the area. Locally, bentonite has probably been mined to line canals, stock ponds and reservoirs in the area. No leases or mining claims exist for these deposits.

Generally, expandable clay was found to occur throughout the area in the Bearpaw Shale Formation, and ceramic and brick clay in the Judith River Formation. The same area as that for bentonite may be considered an area for expandable clay (lightweight aggregate); also, the same area as that for coal (Judith River Formation) may be considered for brick and ceramic clay (Figure 3.4).

Coal occurs in the sedimentary rocks of the Upper Cretaceous Eagle, Judith River and Hell Creek Formations, and in the Fort Union Formation of Tertiary

age. The most continuous beds are found in the Fort Union Formation, which does not exist in the Monument. While it is known that coal occurs in the sedimentary rocks of the Upper Cretaceous Eagle and Judith River Formations in the Monument, it is highly unlikely that coal bed methane would result in commercial quantities due to the geologic setting of the coal, the quality of the coal, the volumes of the coal and the non-continuous beds of coal.

During the steamboat era, and later when numerous homesteads were located on these lands, some small underground coal mines were developed to satisfy fuel needs. These were all abandoned by the 1930s and no coal activity is present today. The limited reserves of this area, combined with high transportation costs and abundance of higher BTU-content coals in the Powder River Basin, Fort Union Basin and Alberta, Canada, make it appear very unlikely that this area will be of any competitive interest in the future.

Saleable Minerals (Sand and Gravel and Quarry Rock)

Supplies of sand and gravel can be found in the area from deposits of water-worked till, in stream gravels and river terraces, and in glacial deposit features, eskers and kames. No active pits or quarry sites currently exist.

Paleontology

The Cretaceous age sediments exposed along the Missouri River Breaks are of both marine and terrestrial origin with sediments that contain fossil remains ranging from large vertebrates to extensive shell beds. Several publications on these specimens attest to the importance of the area.

The first dinosaur bones described from North America were collected from the region by a government survey in the mid-1800s. Most of the specimens were transported downriver on steamboats and eventually shipped overseas and are now housed in European museums.

More recent researchers broadened their focus to include a variety of fossil groups. For example, during the 1970s the Missouri River Breaks hosted researchers interested in mammal and shark systematics and evolution. In 1984 and 1985, a paleontological inventory was conducted in the UMNWSR. The results of that inventory identified several sites where terrestrial bone beds and marine fossil remains occur. The area surrounding the river inside the Monument has not been inventoried. These lands have high potential to yield significant finds of both terrestrial and marine fossil assemblages.

Most of the known paleontological resources in the planning area have been located along the river. The BLM surveys in 1983/84 between Judith Landing and U.S. Highway 191 identified 104 sites in the Judith River Formation. These sites varied from incomplete dinosaur skeletons, to diverse invertebrates, to “wash” sites consisting of small teeth, scales, vertebra and similar materials. Other important areas include the Cow Creek ACEC, Cow Creek WSA, and Dog Creek WSA.

Soils

Soils developed primarily from sedimentary bedrock (approximately 70%) that was deposited during the Upper Cretaceous periods and from lesser amounts of glacial till (approximately 5%) and mixed alluvium (approximately 25%). Soils are generally fine textured, well drained and slowly permeable. Landforms range from broad rolling ridges to steep (20% to 60% slope) or very steep (>45% slope) dissected valley walls (USDA 1993). These sedimentary break landforms were formed as a result of the Missouri River being rerouted by continental glacial activity during the Pleistocene Epoch.

Detailed soil surveys have been published by the Natural Resources Conservation Service (NRCS) for Blaine-Soil Survey Area (SSA) 608 (USDA 1986), Choteau-SSA 615 (USDA 2003), Fergus-SSA 027 (USDA 1988) and Phillips-SSA 641 (USDA 2004). These soil surveys were performed by the NRCS according to National Cooperative Soil Survey standards, and were done at the second and third order of detail. Pertinent information for review and analysis is from the published Soil Surveys and the National Soils Information System (NASIS) database for the area. For each soil mapping unit, interpretive ratings and soil characteristics are provided that can be used for general land-use planning and management. Soil investigations should be done at the site-specific level to determine the suitability of soils at specific locations.

Appendix S lists the Soil Survey Geographic (SSURGO) soil mapping units on BLM lands, including acreages. For each soil series, general soil characteristics and associated ecological sites are listed. Those series with severe water or wind erosion hazards, hydric soil or prime farmland soil are noted on the table. The soils maps for the Monument (Soils West Half and Soils East Half) are available on the BLM website at http://www.blm.gov/mt/st/en/fo/lewistown_field_office/um_rmp_process.html.

Severe water erosion hazards for each Soil Mapping Unit (SMU) were identified using the k-factor and slope percentage assigned to each SMU. These values are available in the soil characteristic tables in the soil surveys, published by the NRCS. The k-factor is the soil

erodibility factor that quantifies the susceptibility of erosion. SMUs with a k-factor of .32 and greater and representative value slope of 20% and greater are considered to be susceptible to water erosion when soils are disturbed, devoid of vegetation and bare. Using these criteria, there are approximately 297,155 acres, or approximately 80%, identified as being susceptible to severe erosion on BLM land.

Severe wind erosion hazards for each SMU were identified by using the Wind Erodibility Group (WEG) assigned to each SMU. WEG is a grouping of soils that have similar properties affecting their resistance to soil blowing. Soil texture, organic matter content, calcium carbonate percentage, fragment content and aggregate stability are the most important properties with respect to soil blowing. There are nine groupings: 1, 2, 3, 4, 4L, 5, 6, 7 and 8. The lower the number, the greater the risk of wind erosion. These groupings are also available in the soil characteristic tables in the Soil Surveys, published by the NRCS. SMUs with a WEG of 2 and less are considered susceptible to severe wind erosion. Wind erosion hazard increases when vegetation is removed and soils are bare. There are 4,888 acres in the Monument with a severe wind erosion rating or approximately 1% of the area.

Sedimentary Soils

Sedimentary soils developed in clayey, calcareous or acid shales, siltstones and sandstones of the Bearpaw, Judith River, Clagget and Eagle Sandstone Formations. Soils developed in shale are typically fine textured, high in smectitic 2:1 clays, and very shallow (<10 inches) to moderately deep (20 to 40 inches). Where high sandstone ridges occur, soils are loamy or sandy. These sedimentary soils are vulnerable to degradation and highly erosive because of their steep to very steep (20% to 65%) slopes and extreme physical properties such as high clay content, slow permeability, very high surface runoff, relatively shallow depth to bedrock and sparse vegetative ground cover. Soils are generally low in organic matter and high in sodium and soluble salts.

Active geologic erosion is observed throughout the Monument. This process can be accelerated by surface disturbance, especially on steep and very steep slopes when the protective vegetative cover is removed. Soil erosion is a natural process that occurs on all land surfaces. Soil erosion should only be viewed as detrimental when the rate of erosion decreases site productivity or when water quality is degraded. Mass soil movement is also a naturally occurring process; it too can be accelerated by surface-disturbing activities (cutting roads into hillsides dominated by clays over shale). Soil rutting and compaction become severe during moist and wet soil conditions. Rutting hazards are high due to the low soil strengths.

Glacial Till Soils

These soils are located on nearly level to rolling (1% to 15%) slopes and are typically very deep (>60 inches) (USDA 1993). Textures are loamy to clayey. Erosion is slight to moderate due to the relatively gentle rolling topography, short slope lengths and prominence of dense sod-forming vegetation. When disturbed, water and wind erosion hazards increase.

Alluvial Soils

These soils are on nearly level to undulating (0% to 8%) slopes along floodplains, stream terraces, alluvial fans and footslopes (USDA 1993). They are important because of their high vegetative production potential. Soil properties are variable and can differ over short distances. These soils range from sandy to clayey, poorly drained to well-drained, and slightly to severely erosive. Erosion increases when soils are compacted and vegetative cover is disturbed. Hydric soils exist, although they are not extensive. Hydric soils are defined as soils that formed under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in the upper part of the soil (Federal Register 1994).

Prime Farmland

The BLM land includes approximately 2,319 acres of potential prime farmland soil mapping units (designated by the USDA-NRCS). Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. It has the combination of soil properties, growing season, and moisture supply needed to produce sustained high yields of crops in an economic manner if it is treated and managed according to acceptable farming methods. In general, prime farmland has an adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, an acceptable level of acidity or alkalinity, an acceptable content of salt or sodium, and few or no rocks. Its soils are permeable to water and air. Prime farmland is not excessively eroded or saturated with water for long periods of time, and it either does not flood frequently during the growing season or is protected from flooding (USDA 2003). To meet the criteria of a prime farmland unit, most soils on BLM land would require additional moisture, such as dependable irrigation water.

Sedimentation

Natural geologic erosion is accelerated when a geomorphic threshold is exceeded. The threshold most often exceeded is destruction of vegetation/ground cover.

The Missouri River above Fort Peck dam drains the entire Breaks region. Sediment studies conducted in Fort Peck reservoir revealed a 298% increase in average annual sediment load over the past thirty years (Corps of Engineers 1989). The increase may be an indication that the vegetation/ground cover threshold is being exceeded. Though the Monument is only a small fraction of the watershed that drains into Fort Peck reservoir, it is still a highly erosive landscape that can be contributing to sedimentation of the Missouri River and Fort Peck reservoir.

Vegetation – Native Plants

Vegetation is a mixture of plant communities from the northern prairies and plains to the badland Breaks. Variability in geology, topography, soils, and effective precipitation lead to a complex mosaic of different vegetation communities and transitions between communities. In addition, influences of fire (or lack of fire), animal populations, and management practices have led to varying successional levels within plant communities.

Forest and Woodlands

The four main forest types are: Douglas-fir, juniper, ponderosa pine and mixed hardwoods.

Douglas-fir is commonly found on the cooler and wetter aspects (northerly and easterly).

The juniper forests are found mostly on dry, rocky sites.

The ponderosa pine forest exists in scattered pockets throughout the Monument on all aspects and elevations. These forests are considered more savanna types, rather than open forest, with the break point being sites that are not capable of producing at least 25% canopy coverage.

The mixed hardwoods, known as riparian forests, are characterized with stands of cottonwoods, aspen, chokecherry and box elder. See the Vegetation – Riparian section of this chapter for a more complete description of riparian communities.

Rangelands

Badlands

Much of the Monument consists of badlands and breaks. The breaks consist of steep, rugged topography interspersed with benches and rolling hills. Badlands support little vegetation because of steep terrain, shale and rock outcroppings, and the abundance of heavy clays.

Grassland Communities

Grassland communities are found on a variety of sites. Common species include western and thickspike wheatgrass, needle-and-thread grass, bluebunch wheatgrass, green needle grass, Sandberg bluegrass, plains reed grass, inland salt grass, blue grama, prairie junegrass, and threadleaf sedge.

Sagebrush/Grassland

Sagebrush/grassland communities occur throughout the Monument on ridges and slopes. The conspicuous species is Wyoming big sagebrush with wheatgrasses, but these communities also include silver sagebrush, rabbit brush, needle grasses, blue grama, fringed sagewort and other mixed prairie species. These communities are in various successional stages from influences of wildlife, livestock, fire (or lack of), and human activities. They account for most of the forage that wildlife and livestock use.

Other adapted shrubland communities occur in areas where particular site characteristics are present.

Where soils are of better quality and soil moisture conditions are favorable, woody draw shrubland communities exist. These communities include chokecherry, currant, buffaloberry and snowberry. These communities are particularly important to wildlife species.

Crops

Farming is authorized in three locations on BLM land. Under a special use permit, some farming occurs on approximately 650 acres of 1,300 acres acquired by BLM in the Loma area that is part of an upland bird project. In the benchlands upriver from Steamboat Rock and outside of the UMNWSR, some old agricultural trespass has occurred (approximately 100 acres) on BLM land. This area is being prepared for re-establishment of perennial native species. At the James Kipp Recreation Area, 45 acres are farmed as part of a weed management program. With these exceptions, no farming occurs on BLM land.

Standards for Rangeland Health, especially Standards 1, 2 and 5, directly correlate to vegetation. A detailed description of the Standards for Rangeland Health is found in Appendix J.

Threatened, Endangered, and Sensitive Plant Species

No populations of federally listed plant species are found in the Monument. However, the Montana Natural Heritage Program lists hot spring phacelia (*Phacelia*

thermalis), subterranean Indian breadroot (*Pediomelum hypogaeum*), persistent-sepal yellow-cress (*Rorippa calycina*), and square-stem monkeyflower (*Mimulus ringens*) as plant species of concern in the area of the Monument.

Vegetation – Riparian

Wetlands are transitional lands between terrestrial and aquatic systems where the water table is usually at or near the surface or land is covered by shallow water. For purposes of this classification, wetlands must have one or more of the following attributes: (1) at least periodically, the land predominantly supports hydrophytes; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season each year (BLM 1986a).

Riparian areas are those areas within wetlands geographically delineated by distinctive resource values and characteristics that are comprised of aquatic and riparian ecosystems. Riparian areas may be associated with lakes, reservoirs, potholes, springs, bogs, wet meadows, and intermittent or perennial streams. Hansen (1989) described approximately 8,000 acres of riparian habitat existing along the Missouri River in the Monument area.

Vegetative species common to riparian areas vary widely from site to site. Appendix T lists the more common species that occur in riparian areas.

Riparian communities along the perennial drainages and larger intermittent streams are often dominated by cottonwood and willow with occasional stands of green ash and box elder. The understory often consists of woody plants such as chokecherry, buffaloberry, sumac, currant, grasses, and forbs. The higher terraces adjacent to the floodplains are often dominated by silver sage or greasewood with a grass understory.

Many of the wildlife species found in the Monument area spend part or all of their life cycle in these riparian areas (Hansen 1989). Riparian areas also protect the soil from erosion and trap runoff to release later as streamflow. Their importance cannot be over-emphasized.

Vegetation within riparian areas is utilized mainly by livestock, mule deer, whitetail deer, elk, and ring-necked pheasants. This vegetation type is the primary habitat on BLM land for whitetail deer, mourning doves, and pheasants due to its dense understory. These riparian areas are extremely important for neo-tropical and other migratory birds (Scott et al. 2003). Many migratory birds are present in this type. In fact, a wider diversity of

non-game species occurs within this vegetation type than in any other.

The riparian areas generally are not meeting BLM's goals of proper functioning condition. Riparian areas along the Missouri River are being impacted by flow regulations from upstream dams, livestock grazing, recreation, and nonnative exotic species. Flow regulation and past livestock grazing practices have resulted in a loss of sapling and pole age classes of preferred woody species in many locations. Riparian areas on the tributaries to the Missouri River are being impacted by irrigation withdrawals, livestock grazing, and agricultural practices. Impacts that are beyond the control of BLM, such as irrigation withdrawals and agricultural practices, have made it impossible to achieve site potential in several areas. In these situations, the site capability is the highest level that can be achieved. If this level provides the necessary physical and ecological functions, it could still represent proper functioning condition (PFC). If not, some areas may never achieve PFC and our goal would be to move these riparian areas towards their capability.

Efforts are now being directed at restoring the river to a more normal condition. Through an informal agreement, the U.S. Bureau of Reclamation (BOR) has agreed to provide a dominant discharge spring pulse out of Tiber Reservoir every four to five years for Missouri River fish migrations. This could help the Upper Missouri River flood-dependent riparian vegetation.

Recent studies by the U.S. Geological Survey (Auble and Scott 1998, Hansen 1989, and Scott and Auble 2002) show a significant lack of regeneration of cottonwood, willow, and understory species on the Missouri River. These studies indicate the major factors affecting regeneration are flow manipulation by upstream dams on the Missouri River and continuous hot season use by livestock. On the Upper Missouri River, infrequent, large floods create the physical site conditions required for successful tree establishment. Operation of upstream

dams has altered the river's historic flow regime and decreased the frequency at which large flows occur.

Preferred woody species on the Missouri River are also being affected by recreational impacts, particularly the understory species such as green ash, box elder, chokecherry, etc. Most recreation campsites are located underneath old cottonwood groves. Recreationists have directly impacted understory species by camping, trampling, and firewood gathering. At popular campsites, shrub elimination and soil compaction has precluded the site from returning to a natural shrub-dominated site.

According to Kudray et al. (2004), although herbaceous exotics are well established throughout the Wild and Scenic River, woody exotics are uncommon. Russian olive (*Elaeagnus angustifolia*) is the only woody exotic; however, salt cedar (*Tamarisk*) occurs on U.S. Fish and Wildlife Service land just below the Monument. Russian olive is in the beginning to middle stages of invasion in the UMNWSR. Since there is approximately a ten-year lag before newly established Russian olive individuals become reproductively mature and provide seeds for



Riparian Area at McGarry Bar



Riparian Area below Monroe Island



Riparian Area at Woodhawk

establishment in new areas, a limited and critical time window exists for effective control and management of Russian olive within the UMNWSR. Russian olive can displace native shrubs and later successional trees, eventually forming monotypic stands that fundamentally alter natural ecosystem composition, structure, function, and habitat value (Kudray et al. 2004).

Hansen (1989) suggests that one acre of seedling/sapling/pole stage cottonwood trees be present for every acre of mature trees to maintain the current status of mature trees. Less than this one-to-one ratio indicates that if current trends continue, there will be a reduction in the acres of mature cottonwoods in the future. On all land (BLM, state and private) in the wild and scenic segments of the Missouri River, there are presently 4,450 acres of seedling/sapling/pole cottonwoods and 5,893 acres of mature cottonwoods. On just the BLM land in this stretch, the ratio of replacement cottonwoods to mature cottonwoods appears to meet the criteria of the one-to-one ratio.



Young Cottonwoods on the Upper Missouri River

This section examines the current status of cottonwoods on the wild and scenic segments of the Missouri River. It does not consider the acres of cottonwoods removed by past practices such as agriculture, intense grazing, or wood cutting. Therefore, the total acres of cottonwoods currently found along the Missouri River represents a fraction of what would be there if these past human-induced disturbances had not occurred.

Vegetation – Noxious and Invasive Plants

The Monument has seen a significant increase in the amount and distribution of noxious weeds and invasive plants along the Missouri River and many of its major tributaries in the past two decades. Efforts to control noxious weeds along the river have included herbicide treatments, hand pulling, and prescribed fire treatments used to increase the effectiveness of herbicides and

enhance the establishment of biological control agents that have been released to control a wide variety of weed species.

From 1999 to 2002, the BLM surveyed the UMNWSR and found that every river bottom has at least one noxious or invasive plant established. In total, 19 noxious/invasive plant species occupy over 550 acres. The noxious and invasive weeds maps (Weeds West Half and Weeds East Half) are available on the BLM website at http://www.blm.gov/mt/st/en/fo/lewistown_field_office/um_rmp_process.html.

River bottoms and cut banks contain the majority of infested acres. This is attributed to the many natural disturbances common with river systems such as: flooding, ice jams/scouring, and fluctuating surface water levels. These areas are also well used by livestock, wildlife, and people that can potentially create additional disturbance and/or supply noxious/invasive plant seed from other areas.

All of the recreational use areas within the UMNWSR are infested with several species of noxious/invasive plants. These areas are at further risk with the potential for movement of seed and plant material from site to site in the clothing, gear, and pet fur of the many visitors to these sites. The potential for the introduction of noxious/invasive species that are not currently present is also greater at these sites due to human activities. See Appendix U for a list of noxious/invasive plant species at recreation sites.

Although documented infestations occur in a few areas, most of the upland areas are relatively free of noxious/invasive plants. Areas in these off-river sites that would be most at risk for invasion or may currently be infested are: roads, trails, wildlife/livestock gathering areas, riparian areas associated with springs or non-perennial streams, areas that see measurable recreational use and any areas experiencing natural or manmade disturbance.

All six of the Wilderness Study Areas (WSAs) have infestations of several species of noxious/invasive plants. Most of these infestations are along areas near the Missouri River.

The Montana Aquatic Nuisance Species (ANS) Management Plan (Montana ANS Steering Committee 2002) identifies salt cedar and purple loosestrife as priority class 4 aquatic nuisance species. This classification indicates that these species are present and that management strategies are being implemented to mitigate impact, control population size, and prevent unintended dispersal.

Many non-native plant species occur and are commonplace across the State of Montana. Many of

these species are considered naturalized plant species. These species have a very wide distribution in the United States and some are found throughout the world. Most of these plants have undesirable qualities, but are so widespread that they are tolerated in most management practices. Some examples include yellow sweet clover, Kentucky bluegrass, timothy, smooth brome, crested wheatgrass, and kochia.

Visual Resources

The original inventory of visual resources was completed in two phases. The area mostly south of the Missouri River was inventoried in 1979 with the Missouri Breaks Grazing Environmental Statement (BLM 1979). The visual data for the remaining area north of the Missouri River was associated with the Prairie Potholes EIS project in 1982 (BLM 1982a). Both of these projects were located within what was formerly the Lewistown District Office.

The inventory was undertaken to evaluate the visual characteristics of land, water surface, vegetation, and structures that provided the subsequent delineation of scenic quality, sensitivity to changes in the visual landscape, and distance zones. These three categories were factored together in a matrix (BLM Manual 8410) to determine Visual Resource Management (VRM) Classes I through IV for individual geographical areas. The VRM Class I areas are the most restrictive and Class IV areas are the least restrictive. Table 3.3 shows the total acres for each class.

Table 3.3	
Visual Resource Management Classes	
VRM Class	Acres
Class I	61,700
Class II	118,800
Class III	8,200
Class IV	186,300

A new visual resource inventory for the previously classified VRM Class III and IV areas was completed in 2004 to address sensitivity to changes in the visual landscape with designation of the Monument. This new inventory and guidance for WSAs is addressed in Chapter 2 through alternatives for changing the current VRM classes.

VRM Class I

The VRM Class I areas include the wild segments of the Missouri River. A VRM Class I rating is intended to preserve the existing character of the landscape. It provides for natural ecological changes; however, it does

not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention to the casual observer.

This visual category includes 61,700 acres, or 16% of the BLM land. It also includes the Bodmer cultural landscape areas in the UMNWSR. The Bodmer landscapes are fan-shaped viewsheds associated with the illustrative drawings completed by Karl Bodmer. Karl Bodmer accompanied the expedition of Prince Maximilian in 1832-34 to gather information about lands acquired in the Louisiana Purchase and its people.

Visual Resource Inventory Classes and Visual Resource Management Classes

Visual resource inventory classes are assigned through the inventory process. Class I is assigned to those areas where a management decision has been made previously to maintain a natural landscape. Classes II, III, and IV are assigned based on a combination of scenic quality, sensitivity levels, and distance zones.

Visual resource management classes are assigned through the resource management plan. The assignment is based on management decisions considering visual values, actions that may result in surface disturbances, and the impacts on the visual values.

VRM Class II

The VRM Class II areas are associated with the Scenic and Recreational segments of the Missouri River, the lower portions of the Arrow Creek and Judith River watersheds, Black Coulee west of Ragland Bench, and the six WSAs (Dog Creek South, Stafford, Ervin Ridge, Woodhawk, Cow Creek, and Antelope Creek). The VRM Class II rating is intended to retain the existing character of the landscape. Management activities may be seen but should not attract the attention of the casual observer (viewer). The level of change to the characteristic landscape should be low. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the landscape.

This visual category includes 118,800 acres, or 32% of the BLM land.

VRM Class III

The VRM Class III areas are found in the uplands portion of the Monument. This rating is intended to

partially retain the existing character of the landscape. Management activities may attract attention but should not dominate the view of the casual observer. The level of change to the characteristic landscape should be moderate. These changes should repeat the basic elements found in the predominant natural features of the area.

This visual category includes 8,200 acres, or 2% of the BLM land.

VRM Class IV

The VRM Class IV areas are also found primarily in the uplands portion of the Monument. This rating provides for management activities that require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention.

This visual category includes 186,300 acres, or 50% of the BLM land.

Water

Ground Water

Ground water occurs in unconsolidated materials (alluvium, glacial outwash, or terrace deposits) and in consolidated rocks such as sandstones, shaley sandstones, coal, limestone, or igneous rocks.

Most of the BLM land along Arrow Creek and the Judith River lies above the floodplains on the Cretaceous age shales. No shallow aquifers are present for ground water development.

The Missouri River in the Monument area is a young river system in geologic terms. Floodplains are poorly developed or absent, reducing potential for ground water development. The adjacent Breaks are in the Bearpaw shale, which contains thin, widely scattered and isolated sandstone stringers. Yields are seldom large enough for well development (less than 2 gallons per minute (GPM)), but several small springs and seeps do occur in the deeply incised drainages. Water quality is naturally poor, with total dissolved solids (TDS) generally too high for domestic or livestock use.

The Breaks region is underlain by the Judith River and Eagle sandstones. Depths from the surface to these aquifers range from 700 to 2,500 feet. Most wells in these formations flow at the surface yielding 2 to 60 GPM. Water quality is suitable for livestock but generally not for domestic use.

Occasionally, aquifers are present at the contact between terrace gravel deposits and the underlying Bearpaw shale. These aquifers usually appear as low yield springs and seeps (less than 2 GPM) on hillsides above drainages. Water quality is generally suitable for livestock but not for domestic use.

No other shallow aquifers (less than 500 feet) exist.

Surface Water

Streamflow volumes differ greatly. Flows in all unregulated streams have large seasonal variations, with the largest flows generally occurring during the spring or early summer as a result of snowmelt and rainstorms. The Missouri and Judith Rivers are the only perennial streams in the Monument. Table 3.4 lists the perennial and intermittent streams. Numerous ephemeral streams also exist but flow only in response to snowmelt or intense summer storms.

Peak flows on prairie streams from snowmelt occur in March or April. Larger peak flows on small drainages can occur from intense summer thunderstorms but generally not on an annual basis. Summer rainstorms can result in short intervals of increased streamflow during June through August.

During winter, streamflow in prairie streams is greatly reduced or absent as a result of little ground water inflow and ice formation.

Stream Definitions

Perennial Stream. A stream or stretch of stream that flows continuously for most of most years. Perennial streams are generally fed in part by springs or discharge from groundwater.

Intermittent Stream. A stream or stretch of stream which flows only at certain periods of the year when it receives water from springs, discharge from groundwater, or melting snow in mountainous areas. These streams generally flow continuously at least one month most years.

Ephemeral Stream. A stream or stretch of stream that flows in normal water years only in direct response to precipitation. In normal years, it receives no water from springs and no extended supply from melting snow or other surface source. Ephemeral streams are not in contact with groundwater and normally do not flow continuously for as long as one month.

Most precipitation is transpired from plants, evaporated, added to soil moisture, or added to the supply of ground water. Average annual runoff is approximately 0.5

inches. Average annual precipitation ranges from 12 inches in the eastern part of the Monument to 14 inches in the western portion of the Monument (USDA 1977).

Surface water quality is variable depending on the geologic formations through which the water has passed and the volume of flow in the stream. Dissolved solids are derived primarily by the leaching of soluble minerals from soils and geologic formations underlying the drainage basin. The dissolved solids are composed largely of the cations calcium, magnesium, and sodium, and the anions bicarbonate, sulfate, and chloride.

Variations in the dissolved-solids concentration and composition in streams result primarily from changes in the amount and source of streamflow. During low flows, water in the streams is derived mostly from ground water sources and will reflect the dissolved-solids concentration and water type of contributing aquifers. During high flows, most of the water entering the streams is from precipitation runoff. The relatively short period of time that the runoff is in contact with the soils of the basin provides little opportunity for minerals to dissolve. Consequently, the increased volume of water during high flows dilutes the dissolved solids.

In addition to streamflow variability and geology, other factors that affect the dissolved solids concentration of a stream include irrigation return flows, saline seeps, and water losses from evapotranspiration. Dissolved solids concentrations during low flow range from 1,500 to 3,500 milligrams per liter (mg/l). At high flows, concentrations range from 500 to 1,300 mg/l. The predominant ion in these prairie streams is sodium sulfate.

Streams in the Monument area normally exhibit a pH between 6.5 and 8.5, typical of well-buffered natural waters. Most streams have generally large alkalinities that provide a buffering capacity that prevents large changes in pH from persisting far downstream. Because of the near-neutral pH, concentrations of dissolved trace elements rarely exceed water quality standards.

Water Rights

The BLM will apply for water rights to water sources on BLM land under the same regulations as all other appropriators. The State of Montana began adjudicating water rights in the early 1980s. The BLM filed claims on all existing water developments and natural sources (springs, pot holes, lakes, etc.) occurring on BLM land. Table 3.5 lists water developments by type and quantity.

The BLM and the State of Montana entered into a compact in 1997 for instream flow reservations on the 149-mile stretch of the Missouri River that comprises the UMNWSR. The compact recognized all valid, existing rights prior to December 31, 1987 and created an "available water supply," which is the volume of surface and ground waters available to meet the state's projected demands. All depletions from appropriations completed after December 31, 1987, shall be subtracted from the available water supply. The state will not subtract from the available water supply groundwater uses of 35 GPM or less, not to exceed 10 acre-feet per year, and surface water appropriations of 35 GPM or less, not to exceed 10 acre-feet per year for domestic use.

Table 3.4 Perennial and Intermittent Streams*				
<i>Name</i>	<i>Stream Status</i>	<i>Total Miles</i>	<i>No. Miles on BLM Land</i>	<i>Percentage on BLM Land</i>
Judith River	Perennial	10.4	0.4	4%
Missouri River	Perennial	149	68	46%
Antelope Creek	Intermittent	14	6	40%
Armells Creek	Intermittent	13	5.5	42%
Arrow Creek	Intermittent	18	1.3	7%
Bull Creek	Intermittent	15	14	91%
Bullwhacker Creek	Intermittent	21	21	100%
Cow Creek	Intermittent	32	9.5	30%
Dog Creek	Intermittent	7	2	29%
Fargo Coulee	Intermittent	10	9	90%
Squaw Creek	Intermittent	10	10	100%
Woodhawk	Intermittent	13	12	98%

*This table is not an all-inclusive list of intermittent streams in the Monument.

Table 3.5 Water Developments	
<i>Description</i>	<i>Quantity</i>
Reservoirs/Pit Dams	337
Developed Springs	7
Stock Tanks	32
Water Savers/Catchments	14
Wells	15

The Monument Proclamation establishes a reserved water right for the Judith River and Arrow Creek. The BLM is currently developing a strategy to address the reservation. The BLM needs to know the magnitude, timing, and frequency of flows necessary to support the outstanding water dependent biological resources and cottonwood galleries that were the basis for the reserved water rights. Once the BLM has an idea what flow criteria are necessary to support the above-mentioned features, the information will be used in the negotiation process and will be available to interested parties concerned about the quantification. The reserved water rights process generally takes several years to complete, and the reservation process will not be completed with the plan development phase of this plan.



Cottonwood Gallery on Arrow Creek

Water Quality Impaired Streams – 303(d) List of Impaired Streams

Water quality within the Monument is primarily influenced by non-point source pollution. The BLM is the designated land management agency responsible for controlling non-point source pollution on BLM lands within the Monument (BLM 2002f). Non-point sources such as livestock grazing, roads, and vegetation management are addressed through the use of BMPs.

The Environmental Protection Agency, in administering the Clean Water Act, requires all states to identify rivers,

streams, lakes, and wetlands where beneficial uses are impaired or threatened by human activity, and to schedule those waters for development of water quality restoration plans. This process is known as the Total Maximum Daily Load (TMDL) process. Table 3.6 lists the impaired streams within the Monument that are in the Montana Department of Environmental Quality (DEQ) 2006 Water Quality Assessment Database. The DEQ is the agency responsible for making beneficial use support and water quality impairment determinations.

The Judith River is in water quality category 4C, which means that no pollutant-related use impairment is identified and a TMDL is not required. Arrow Creek is in water quality category 2B which means that a water quality standard is exceeded due to an apparent natural source. All other streams identified in Table 3.6 will require a TMDL to be prepared by MDEQ. The BLM will participate in the TMDL process for these waterbodies. Armells Creek, Sourdough Creek, Two Calf Creek, Eagle Creek, and Bullwhacker Creek are fully supporting all assessed uses.

Forest Resources

Forest Types

Four main forest types exist throughout the Monument area: ponderosa pine, Douglas-fir, juniper, and mixed hardwoods.

The ponderosa pine forest exists in scattered pockets on all aspects and elevations. Its ability to survive in this harsh environment is due, in part, to an aggressive tap root system. These forests are considered more “savanna” types rather than open forest, with the break point being sites that are not capable of producing at least 25% canopy coverage.

The Douglas-fir type is commonly found on the cooler and wetter aspects (northerly and easterly). The Monument area represents some of the driest sites that are still capable of growing Douglas-fir. Trees that do survive are very slow growing and short in comparison to Douglas-fir that occurs in mountainous regions of central Montana.

The juniper forests are found mostly on dry, rocky sites. These stands are not capable of producing 20 cubic feet per acre per year of wood fiber and, therefore, are not typically thought of as coniferous forests by themselves. They commonly occur with the ponderosa pine and Douglas-fir forests.

The mixed hardwoods, known as riparian forests, are characterized with stands of cottonwoods, aspen, chokecherry and box elder. These forests tend to be

along the main river bottoms and wetter drainages feeding into the Missouri River. Disturbance is common in these forests due to a high site index leading to greater growth potential for all plants. The truly undisturbed sites exist mainly on islands that have not experienced recent fire.

State of Montana Forested Land

The Montana Department of Natural Resources and Conservation (DNRC) conducted an inventory on approximately 8,200 acres of state-owned forested land that is interspersed with Monument lands (BLM 2003b). Considering the random nature of the forested portions of state and BLM land, this inventory serves as an adequate random sampling of forested acres for BLM land.

Lands and Realty

The Monument contains those BLM lands in north Fergus County adjacent to the Missouri River including the Armells Creek and Judith River drainages; southeast Chouteau County along the Missouri River and Arrow Creek drainages; south Blaine County along the Missouri River as well as the Lone Tree Bench, Cow Creek and Bullwhacker drainages; and southwest Phillips County including the Cabin Creek, Bull Creek and Antelope Creek drainages. The majority of the large blocks of BLM land are east of the Hole-in-the-Wall area and along Arrow Creek. At about the Ervin Ridge area, the BLM land is concentrated over a much wider area, especially on the north side of the river where it extends beyond the river over 15 miles in places.

Table 3.6 Water Quality Impaired Streams According to MDEQ (2006)			
<i>Water Body</i>	<i>Probable Impaired Beneficial Use</i>	<i>Probable Cause</i>	<i>Probable Source</i>
Arrow Creek (Surprise Creek to the mouth (Missouri River))	Aquatic life support, warm water fishery	Iron	Natural sources
Cow Creek (Als Creek to the mouth (Missouri River))	Aquatic life support, warm water fishery	Aluminum, Copper, Iron, Lead	Coal mining, natural sources
Dog Creek (Cutbank Creek to the mouth (Missouri River))	Aquatic life support, warm water fishery	Nitrate/Nitrite (Nitrite + Nitrate as N), sedimentation/siltation	Grazing in riparian or shoreline zones
Fargo Coulee (headwaters to the mouth (Armells Creek))	Aquatic life support, warm water fishery	Alteration in streamside or littoral vegetative covers, Aluminum, Iron, Lead, Phosphorus (total), Total Kjehldahl Nitrogen (TKN)	Natural sources, source unknown
Judith River (Big Spring Creek to the mouth (Missouri River))	Aquatic life support, warm water fishery	Alteration in streamside or littoral vegetative covers, Physical substrate habitat alterations	Agriculture, grazing in riparian or shoreline zones, loss of riparian habitat, rangeland grazing
Missouri River (Marias River to Bullwhacker Creek)	Aquatic life support, primary contact (recreational), warm water fishery	Alteration in streamside or littoral vegetative covers, Copper, Lead, physical substrate habitat alterations	Agriculture, grazing in riparian or shoreline zones, source unknown
Missouri River (Bullwhacker Creek to Fort Peck Reservoir)	Aquatic life support, drinking water, warm water fishery	Alteration in streamside or littoral vegetative covers, Copper, Arsenic	Agriculture, grazing in riparian or shoreline zones, impacts from abandoned mine lands (inactive)

Land ownership in the Monument area is comprised of federal, state and private land (Table 3.7). The BLM has no jurisdiction over private or state land and minerals, and these lands and minerals are not part of the Monument. Landowner permission is required for access to private property.

Access

Access to and within the Monument is provided to the public and private landowners alike by means of BLM roads, BLM easements across private land, state highways, and county roads. In addition, some private landowners have applied for and received rights-of-way (ROWs) across BLM land where needed to access their private land. Access in and to this area is dependent on the weather as roads can be impassable when it rains. Landowner permission may be required for access to BLM roads.

The 35 ROWs that currently exist are for roads and highways, electric lines, telephone lines, oil and gas pipelines, and administrative sites. See Appendix V for a list of the ROWs.

Corridors

Seven corridors were identified in the West HiLine Resource Management Plan where existing roads and utility systems cross the Missouri River. The corridors are found at: Highway 80, Loma, Virgelle Ferry, Secondary Highway 236; McClelland/Stafford Ferry; DY Trail/Power Plant, and Highway 191. The corridors extend from bank to bank and are all one mile wide, with the exception of the corridor at the McClelland/Stafford Ferry crossing, that is two miles wide.

The corridors serve to confine utility and transportation systems to crossing the river in restricted areas, rather

than allowing them to cross the river anywhere within the 149-mile Wild and Scenic River designation, outside the identified avoidance and exclusion areas. However, the corridors do not confine the utility or transportation systems beyond the banks of the river on either side, in effect, allowing utilities and/or oil and gas systems to cross extensive areas of BLM land but requiring them to converge where the designated corridors are identified at river crossings.

Avoidance and Exclusion Areas

Avoidance and exclusion areas for lineal rights-of-way (ROWs) were identified in the West HiLine and Judith-Valley-Phillips Resource Management Plans.

Avoidance areas include the Stafford WSA, the Ervin Ridge WSA, that portion of the Cow Creek WSA in Blaine County, the Cow Creek Area of Critical Environmental Concern (ACEC), riparian areas, areas containing sedimentary Breaks soils and recreational and scenic sections of the UMNWSR.

Exclusion areas include the Wild sections of the UMNWSR; the Dog Creek, Woodhawk, and Antelope Creek WSAs; and that portion of the Cow Creek WSA in Phillips County.

Land Ownership Adjustment

Since the UMNWSR was designated a Wild and Scenic River in 1976, over 8,700 acres of privately owned land and interest in land (conservation easements) have been purchased from willing sellers using the Land and Water Conservation Fund. This Fund and land exchanges continue to be viable options for consolidating BLM land within the Monument.

Table 3.7
Land Ownership in the Monument Area

<i>Surface Ownership</i>	<i>Blaine County Acres</i>	<i>Chouteau County Acres</i>	<i>Fergus County Acres</i>	<i>Phillips County Acres</i>	<i>Total Acres</i>
Monument	150,239	40,386	131,355	52,683	374,663
State	9,509	5,146	20,823	3,304	38,782
Private	9,310	25,807	40,852	3,777	79,746
Total	169,058	71,339	193,030	59,764	493,191

Livestock Grazing

Under the Proclamation, “Laws, regulations, and policies followed by the Bureau of Land Management in issuing and administering grazing permits or leases on all lands under its jurisdiction shall continue to apply with regard to the lands in the monument.”

Currently, 93 livestock operators are licensed to graze within the Monument. These operators use 113 allotments and harvest about 38,000 Animal Unit Months (AUMs) of forage annually (Appendix N). Cattle are the most prevalent class of livestock, although horses also graze some BLM land. Permitted horse use levels are very small in comparison to permitted cattle use.

A wide range of management approaches are practiced among the permittees that graze livestock. Some grazing permits are held by producers that are primarily involved in farming. In these cases, livestock are often grazed on BLM land during the summer and on private land stubble fields in the fall and winter. In some cases, small isolated tracts of BLM land are grazed in conjunction with private land because the intermingled land ownership pattern and terrain make it difficult to manage the BLM land separately from private land. In other cases, large blocks of BLM land are authorized to producers that are primarily involved in ranching. The larger blocks are usually managed under a grazing prescription that is outlined in a watershed plan or an allotment management plan that includes private, state, and BLM land inside and outside of the Monument.

Livestock Operations in the Monument Area

Agricultural businesses were established in the area in the late 1800s and early 1900s. Historically, domestic sheep and cattle were grazed in and around the Monument. By the 1970s all the sheep operations had changed to cattle. In homestead times, horse grazing was also common in the area.

Presently, agriculture businesses in the area of the Monument are mostly dry land farming, hay production and cow/calf livestock operations. Some irrigation does occur on grain and hay crops, and some lands are enrolled in Conservation Reserve Programs (CRP). Not all of the farmers or ranchers in the area have BLM grazing permits or leases in the Monument.

Livestock operations are primarily commercial cow/calf operations. Registered cattle and yearling/stocker cattle herds do exist; however, they are a minority of the livestock operations. Most calves are born from the late winter through spring on private land. Cattle are turned out to graze as cow/calf pairs. Calves are weaned in the fall and most leave the region to be grown out and/or fed

in other parts of the United States. At weaning, most cows are taken to winter pastures where they remain until after they calve the following year. A few operations will graze on the BLM land in the fall with dry pregnant cows. For many operators, fall forage is not critical to their forage supply, hunting season is in progress, and there are other incentives to have their cattle grazing closer to the “home” place.

In order to qualify for a grazing permit/lease on BLM land, operators must have the capability to accommodate their livestock for a specified time on private land owned or controlled (base property) apart from the BLM land (43 CFR 4110). The common qualification standard is the need to have the capability to accommodate livestock for four months on their base property in order to graze the same amount of livestock for eight months on BLM land. Therefore, an operator, by regulation, could not be dependent on BLM land for more than 68% of their total forage need. In practice, it is rare for dependence on BLM forage to exceed 50% and many operations actually depend on BLM forage for less than 20% of their total needs. None of the livestock operations in the Monument area are dependent on BLM land for year-around forage (including inside and/or outside of the Monument). Many operators depend heavily on forage from BLM land during a specific season, primarily spring through fall for five to seven months, and winter their livestock on private land (“home” places). The size and mix of farming and livestock businesses vary widely in the area. Following is a general description of operations in three sub-units in the Monument.

Fort Benton to Arrow Creek (North and South of the Missouri River)

Most operations in this area are primarily dry land farming with some cattle. The BLM land in this area is fragmented in smaller parcels and intermixed with private and state land. Livestock grazing occurring on the BLM land is mostly spring through late summer or early fall when cattle are brought back to graze crop aftermath, and to wean and market calves. Livestock are rarely grazed on BLM land in this area in the fall or winter. For these operators, the season of grazing is important more of a concern than the actual volume (AUMs) of forage since the alternative forage is croplands and/or rangelands fenced with crop. The AUMs from BLM land represent a small percentage of the amount of forage the operation uses.

Arrow Creek to Cow Creek (North Side of the Missouri River) and Arrow Creek to the C. M. Russell National Wildlife Refuge (South Side of the Missouri River)

Operations in this area are mixed farming and livestock businesses with cattle enterprises making up a substantial component of the business. For several of the operators

the only farming is hay production for their cattle and some crop rotation to manage hay fields. Most operators have private land near where they graze their livestock in the Monument. The BLM land is intermingled with private and state land. Grazing allotments commonly have multiple pastures and some grazing rotation occurs between pastures during the grazing season and/or from year to year. Most grazing occurs in the Monument from May to November. Only one operation has a notable amount of grazing occurring in the Monument during the winter.

The dependence on grazing in the Monument varies in this area from those that graze very little in the Monument (versus other BLM, private and state land) all the way to being highly dependent on the Monument for the bulk of their forage in a particular season. For some operations, the late spring through summer grazing on BLM land is more critical than the actual amount of forage needed because of limited alternatives for grazing during that season. None of these operators depend on the BLM land in the Monument for more than 50% of their total annual forage needs.

Cow Creek to the C. M. Russell National Wildlife Refuge (North Side of the Missouri River)

Most of the livestock grazing in this area is by a grazing association. Members of the association have a wide range of mixed livestock and farming enterprises. Some members also have other properties where they graze in addition to the association lands. Several members have their “home” operations some distant away and consequently truck their livestock to and from the grazing association lands. The association properties include private land, state leases, BLM grazing permits in and out of the Monument and grazing permits on the Charles M. Russell National Wildlife Refuge. Like other areas, the primary grazing period is May through October; however, some operators use the range as early as mid-April and some stay until December. Because of how the grazing association operates, members depend on all of the forage for the season (six to eight months) to come from the association’s collective lands and grazing permits. Though some of the members may have a substantial amount of the forage they use coming from the Monument, others may have very little coming from BLM land depending on where the association decides they will have a member graze any given year.

Standards and Guidelines

In 1997, an environmental impact statement was written to implement Standards for Rangeland Health and Guidelines for Livestock Grazing Management. These Standards and Guidelines (Appendix J) were developed with assistance from the Central Montana Resource Advisory Council, local ranchers, and Montana State University. The Standards are ecologically based and

focus on the structure, function, and health of the entire rangeland ecosystem. The Standards are divided into five categories: upland, riparian, water quality, air quality, and biodiversity (BLM 1997). Prior to the development of Standards for Rangeland Health, rangeland management specialists focused primarily on plant species composition and soil surface characteristics to determine rangeland condition.

Guidelines for Livestock Grazing Management describe grazing management methods and practices that are essential to the proper management of livestock on BLM land. In many ways, the guidelines are similar in approach to the Best Management Practices (BMP) developed by the State of Montana for various activities. A detailed description of the Guidelines for Livestock Grazing Management can be found in Appendix J.

Beginning in 1997, the BLM began assessing Standards for Rangeland Health and implementing guidelines for livestock grazing on a watershed basis in the Monument area. Eight watershed and grazing permit renewal areas were delineated and are in various stages of implementation.

Figure 3.5
Riparian Community Health
on Woodhawk Allotment



Site 7a 1997



Site 7b 2002

The rates of response to implementation actions prescribed in the plans depend on several variables including: site potential, off-site influences, weather, timeliness of project installation (when needed), livestock grazing, effectiveness of weed control measures, wildlife use, recreation use, etc. Where management actions have been implemented that address causal factors to improve riparian community health, success generally occurs fairly rapidly as is demonstrated in the photographs for the Woodhawk Allotment (Figure 3.5). However, where causal factors are outside of direct management controls, progress may not be rapid or permanent. Progress in the uplands can be variable and take several years to validate. This can depend on weather, site potential and whether the management action is affecting the cause(s) of not realizing a management goal. Continued monitoring and adjustments as necessary are the means of measuring management success. There have been successes in terms of riparian community management on the Missouri River and more are yet to be realized as implementation proceeds. Upland resource values are being maintained, and as implementation moves forward, modest improvements in resource values are anticipated.

All allotments have been assessed for rangeland health. The watershed plans that have been written to comply with Standards for Rangeland Health (43 CFR 4180) and incorporate Guidelines for Livestock Grazing Management in renewed grazing permits and leases. The plans include:

- Woodhawk Watershed Plan (1998)
- Two Calf Watershed Plan (1998)
- Armells Creek Watershed Plan (2000)
- Beauchamp Watershed Plan (2001)
- Upper Missouri Watershed Plan (2002)
- Loma/Vimy Ridge Watershed Plan (2002)
- Arrow Creek/Upper River/Whiskey Ridge Landscape Watershed Plan (2004)
- Bears Paw to Breaks Implementation Plan (2005)

Minerals – Oil and Gas

The oil and gas Monument study area lies at the southeastern extent of the Bearpaw Uplift in northcentral Montana (Figure 3.6 and Map 3-Side A). The area contains roughly 465 square miles in the Bullwhacker and Chimney Butte/Al's Creek Drainage areas including the existing oil and gas leases. The Monument includes about 375,000 acres of federally owned surface and 396,000 acres of federally owned minerals, of which 42,805 acres are currently leased for oil and gas exploration and development. The other unleased federal minerals will remain unleased since the Proclamation prohibited future mineral leasing within the Monument.

Appendix O and its attachments contain a great deal of information about oil and gas resources, both inside and outside of the Monument. Natural gas development outside of the Monument is a part of the larger oil and gas resource description. However, because of the volume, detail and supportive nature of much of this information it is better suited as an appendix item than in this section.

The 43 leases in the Monument were issued between 1967 and 1999. Twenty-six of the leases, that were issued on or prior to September 1, 1971, have no specific lease stipulations other than the standard lease terms and conditions (Appendix O.1). The remaining 17 leases have some lease stipulations and the standard lease terms and conditions. Although the leases allow for exploration of both oil and gas, natural gas is currently the only commercially extracted resource in the study area. There are no known discoveries of oil in the study area.

Until March 20, 1968, only two wells were drilled in or near the study area. A combination of factors impeded exploration efforts until the late 1960s. With the price of natural gas at 10¢/MCF, a lack of infrastructure in the area (roads and pipelines), and the region being mostly unexplored, natural gas remained undeveloped up until the early 1970s.

The study area is mostly within three producing fields known as the Leroy, Sherard and Sawtooth Mountain Gas Fields (Figure 3.6). Over the past 30 years, steadily rising natural gas prices have resulted in increased exploration and development; resulting in 139 wells being drilled in the Monument. Table 3.8 shows historical activity in these fields.

Three administrative instruments allow oil and gas exploration and development to occur in the Monument: the Oil and Gas Lease, the Communitization Agreement (CA), and the Unit Agreement. The Monument currently includes 43 federal oil and gas leases. There are another three state oil and gas leases in the area. These leases include 42,805 acres of federal minerals and 1,918 acres of state minerals (Appendix O.3). These leases can occur in a non-contiguous manner where the tracts of land are separated by some distance, and in some cases, the distance can be a matter of 4 to 5 miles. The majority of the leases are north of the Missouri River in Blaine and Chouteau Counties, (92% and 5% respectively), and the remainder are in Fergus County (3%). None of the existing federal leases are in Phillips County.

The federal leases were issued under 10-year lease terms. Of the 43 leases in the Monument, 13 are within their primary 10-year term and the other 30 are held in their extended term by either allocated or actual production. Lease suspensions can also play an important role with

the life of some of the leases. Of the 12 West HiLine leases, nine are currently under lease suspension until the Monument Resource Management Plan is finished and three are also under lease suspension pending a lawsuit (Appendix O, Table O.1-1).

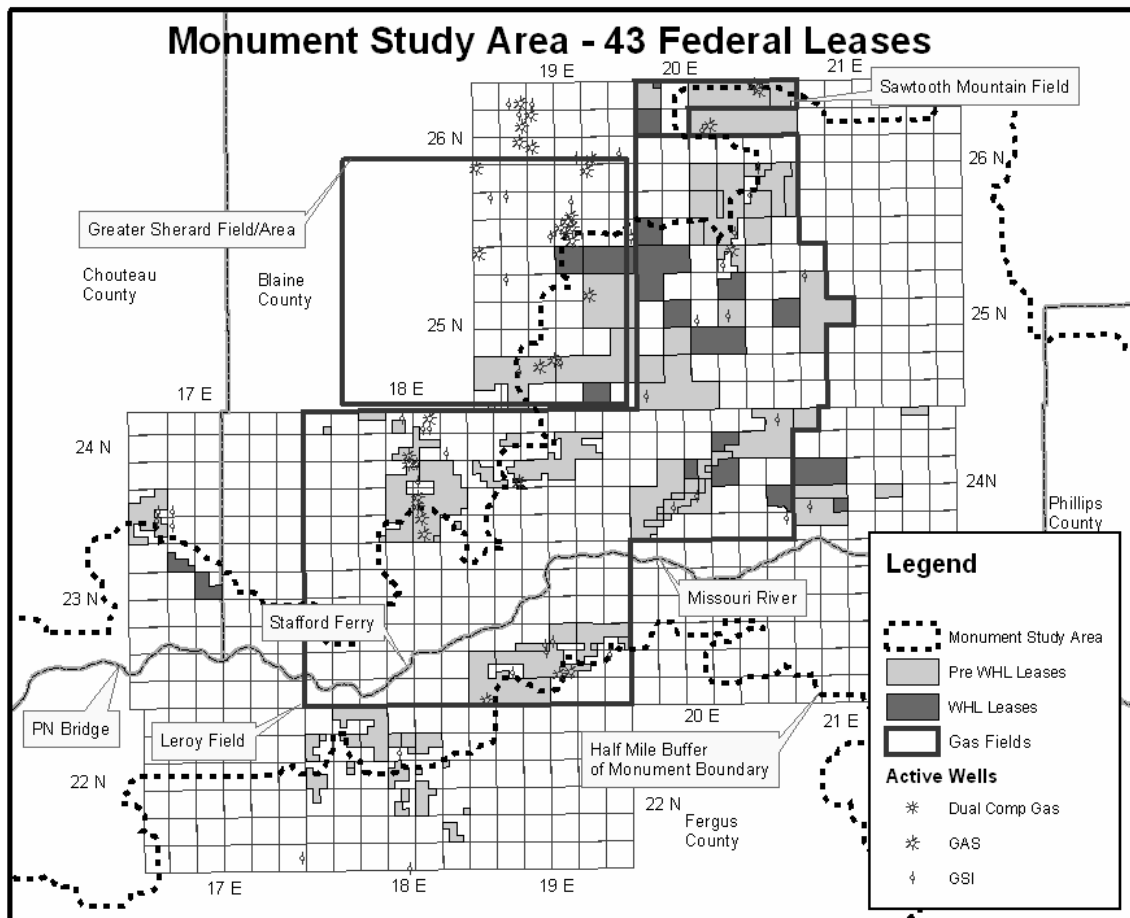
The Proclamation does not allow for future oil and gas leasing and oil and gas activity within the Monument will eventually cease to exist. Once gas wells become depleted on the leases or agreements, the wells will be plugged and abandoned and the leases could terminate if no other wells are drilled on the leases. However, until the last productive well ceases to exist on each lease, communitization agreement or unit, each of the 43 leases continues to have valid existing rights.

Since private land (surface and mineral ownership) is adjacent to and intermingled with the Monument, the likelihood of private oil and gas leases and activity exists. However, without the availability of federal minerals, leasing interest in state and fee minerals may be reduced in areas where the nonfederal minerals are not sufficient to be economically developed independent of the federal minerals.

The Proclamation did not change the BLM's jurisdiction of the federal minerals or surface. It only precluded future leasing. The federal regulations regarding oil and gas operations still apply to all operations on the federal leases. Some of the federal regulations also apply to operations within federal units or federal Communitization Agreements where federal interest is involved (i.e., 43 CFR 3164.1, Onshore Oil and Gas Orders 3, 4 and 5). The regulations in those instances can be applied to non-federal wells within federal units or federal Communitization Agreements.

Leases can also be part of a Communitization Agreement (CA) and/or Unit Agreement. A CA is an agreement that provides an administrative method to develop the gas resources. CAs combine two or more mineral leases (federal, state and private) in order to have sufficient acreage to comply with the spacing required to drill and or produce a well. A CA is formed when a federal lease cannot be independently developed in conformity with an established spacing pattern.

Figure 3.6
Monument Study Area



<p align="center">Table 3.8 Historical Natural Gas Exploration and Development in the Monument</p>					
<i>Natural Gas Wells</i>	<i>Leroy Gas Field</i>	<i>Sawtooth Mountain Gas Field</i>	<i>Sherard Unit Area</i>	<i>Outside of Existing Fields</i>	<i>Total</i>
Drilled	42	2	12	83	139
Dry Holes (Abandoned)	29	2	9	82	122
Completed	13	0	3	1	17
Production	12	0	3	0	15
Shut-In without Pipeline	1	0	0	1	2
Completed Wells Plugged	7	0	0	0	7
Completed Wells Active	6	0	3	1	10
Total Combined Production from the Completed Wells (BCF)	1.7	0	4.0	0	5.7

Currently, there are 11 CAs within or straddling the Monument. Another 10 CAs lie outside of the Monument, yet are common to the Monument because a portion of the lease is common to both the CA and the Monument. Appendix item O.2 provides more information about the spacing requirements in these CAs.

In addition to leases contained in the CAs, two federal leases are also located in a Unit Agreement within the Monument known as the Sherard Eagle Participating Area (PA) "E." This unit PA was formed after the discovery of a geologic feature in 1974. The 1,280-acre PA currently contains three active wells located within the Monument producing from the Eagle Formation. An exploratory unit is an agreement or plan for development and operation that provides for the recovery of oil and/or gas as a single consolidated entity, without regard to separate ownerships and allows for the allocation of costs and benefits on a basis as defined in the agreement or plan.

Geology – Oil and Gas

The Bearpaw Uplift in northcentral Montana was formed by igneous activity that began in the late Cretaceous Period and extended into the early Tertiary Period (Eocene Epoch). A large mass of igneous material was intruded into sediments at the top of the Cretaceous Colorado Group. This action caused a doming effect of the overlying younger sediments on an elevational scale of thousands of feet. Concurrent with this doming effect on late Cretaceous strata was the eruption and deposition of thousands of feet of volcanic rocks in the form of lava flows and volcanic clastics. As a result of being uplifted, the late Cretaceous sediments were subject to extensive erosion, as well as being subsequently buried by the widespread deposition of volcanics.

Within the early Tertiary, a dramatic change came to the Bearpaw Uplift. Whether it was one titanic explosive event or a series of related events, the forces that caused the doming of the Bearpaw Uplift were suddenly removed by an enormous eruption, and the central portion of the Bearpaw Uplift collapsed. This collapse caused a wide variety of structural features, most of them fault-related. Just like a broken plate of glass, the Bearpaw Uplift broke into a mosaic of randomly oriented individual fault blocks where each fault block can have its own unique orientation and as a result created multiple separate fault blocks and structural anomalies. Other tectonic features included gravity detachment blocks that slid away from the center of the dome.

Scattered through a circular zone 20 to 30 miles wide on the plains surrounding the Bears Paw Mountains are long, sharp, narrow, anticlinal folds (perhaps 100 or more), usually cut near their crests by steeply dipping reverse faults. Strike of the folds and faults is peripheral to the circular mountain area. In cross-section, the folds and faults appear to have been caused by nearly horizontal thrusts outward from the mountains. The length of the folds differs greatly, but they average about 10 miles. Between folds, upper Cretaceous strata lie nearly horizontal and apparently undisturbed. The faults and folds and other structural features mapped at the surface are essentially "rootless" as they disappear within the sediments of the upper Colorado Shale. Nonetheless, the intensive faulting that affects the Eagle and Judith River sands provided effective traps for the natural gas to accumulate.

The shallow gas found in the Judith River and Eagle reservoirs is of biogenic origin. The source rocks for the Cretaceous gas in this region are the kerogen-enriched black shales found deeper in the Colorado Group. Without question these source rocks have been buried deeply enough to generate hydrocarbons appropriate to

their thermal maturity. Migration of hydrocarbons, in this case natural gas, occurred along fracture planes or faults developed within the Cretaceous shales and sandstones. The gas is trapped in place by the impermeable rock units lying above the Judith River and Eagle reservoirs, which are the Bearpaw Shale and Claggett Shale Formations respectively (Figure 3.4), and the various faults that can also cause permeability barriers so the gas cannot escape. The Bearpaw Shale has an average thickness of 1,300 feet where the Claggett Shale Formation has a thickness of at least 500 feet. Historically, as of August 2006, 14 wells in the Monument (including a state well surrounded by the Monument) have produced 5.7 BCF of gas and 25 wells within a half mile of Monument lands have produced 6.4 BCF, for a total of 12.1 BCF of gas. The gross value of this volume of the gas produced to date is approximately \$36.3 million assuming an estimated historic value of \$3.00/MCF.

Leroy Gas Field

The majority of the existing federal leases are in the Leroy Gas Field that was discovered in November 1968. The field as a whole is not one contiguous productive unit. Rather, it is made up of numerous discrete fault blocks providing a series of reservoirs that have trapped gas within the subsurface strata. Each reservoir/trap in the Leroy Gas Field is unique (depth, reservoir pressure, pay thickness, porosity, water saturation, orientation, and gas/water content or extent); however, the reservoirs are common to one another since the majority of the wells produce from the upper Cretaceous Eagle Formation.

The Eagle Formation remains the primary target in the Leroy Gas Field for future exploration because of its relatively shallow depths (1,700 feet) and the chance of discovering additional gas-charged fault blocks. The Eagle Formation is composed of three distinct rock units. Depending on the structural orientation of the fault blocks within the Leroy Gas Field, the middle unit of the

Eagle Formation is likely the most prolific formation to trap gas; however, if the conditions exist, the Virgelle Member (the lowermost unit of sandstone rock within the Eagle Formation) also can contain gas. The productive intervals can range from 4 to 60 feet thick.

The Judith River Formation (a shallower upper Cretaceous interval) can also be considered a target for development; however, unless there is a major gas discovery in the Judith River Formation, it will remain a secondary target for development. Future development of the Judith River Formation will likely be a result of searching for gas in the deeper Eagle Formation.

The Leroy Gas Field currently has six active federal wells in the Monument. Table 3.9 shows current natural gas activity in the Monument.

Sawtooth Mountain Gas Field

The Sawtooth Mountain Gas Field lies at the very northern edge of the Monument. It is common to the Monument because two federal leases overlap the Monument and the Sawtooth Mountain Gas Field. Currently, no active Monument wells are within the Sawtooth Mountain Gas Field. The geologic characteristics of the Sawtooth Mountain Gas Field are similar in nature to those of the Leroy Gas Field.

Sherard Unit Area

The geologic characteristics of the Sherard Unit Area in the Monument are similar in nature to those of the Leroy Gas Field as a relatively short distance separates the fields. The first successful Sherard well was drilled in December 1974 and continues to produce.

The leases within the Sherard Unit Area were mostly developed within the Sherard Exploratory Unit. The Sherard Unit currently contains three active federal wells in the Monument as shown in Table 3.9.

Table 3.9
Current Natural Gas Activity in the Monument

<i>Natural Gas Wells</i>	<i>Leroy Gas Field</i>	<i>Sawtooth Mountain Gas Field</i>	<i>Sherard Unit Area</i>	<i>Outside of Existing Fields</i>	<i>Total</i>
Currently Producing	2	0	2	0	4
Shut-In with Pipeline	3	0	1	0	4
Shut-In without Pipeline	1	0	0	1	2
Total Active Wells	6	0	3	1	10

Wells Outside Field Boundaries

One other well in the Monument is not in a defined gas field or unit area. It is just east of the Leroy Gas Field and is shut-in waiting on a pipeline. See Table 3.9.

Existing Infrastructure – Oil and Gas

With the exception of county roads, an estimated 13 miles of access roads in the Monument service 12 federal, one state, and one private well. Many of the access roads are resource roads (two-track type roads) that allow well service vehicles and company personnel to visit the wells and facilities on a scheduled basis. The resource roads are not all-weather surfaces, and operators use judgment as to when the roads are passable.

Pipelines in the Monument service 10 federal and one state well. The estimated length of pipelines supporting the 11 wells is 31.1 miles. The existing pipelines do not always follow access roads. It is estimated that a quarter of the length of pipelines follows access roads. See Table 3.10 for the pipelines within the Monument study area that not only service the 10 federal wells in the Monument, but also service another 19 wells outside the Monument that are part of the overall natural gas system in the area.

The infrastructure related to natural gas surface operations, other than the access roads and pipelines, includes the following items:

- Meter shed (8 ft long x 8 ft tall x 5 ft wide) (Figure 3.7).
- Well head (can be enclosed within the meter shed depending on the operation) (Figure 3.8).
- Gas meter run (enclosed within the meter shed) (Figure 3.9).
- Glycol barrel (can be enclosed within the meter shed).
- Small water separator (normally enclosed within the meter shed depending on the well and the operation).
- Water pit (size depends on the operation, but can range from 20 ft x 20 ft x 8 ft to 40 ft x 40 ft x 10 ft).
- Gas compressor. (Compressors typically do not accompany each well. Depending on the operation and the size of the compressor, one gas compressor could service 8-12 wells. Currently, no gas compressors are located within the Monument study area; however, a skid-mounted 42 HP compressor has been approved by the State of Montana on the David Kincaid No. 1 private well (the compressor has not been installed as of this writing).

- Gas powered pumping unit, used to pump water off the well to allow gas to flow to the surface. Currently, no gas powered pumping units are located in the Monument.

Figure 3.7 Meter Shed



Figure 3.8 Well Head Only



Figure 3.9 Meter Run within Meter Shed



Table 3.10 Pipelines within the Monument Study Area		
<i>Pipeline Section</i>	<i>Well(s) PL Services</i>	<i>Pipeline Length</i>
Butch Camp	Fed No. 1-7*	4.8 miles (4.6 miles of ROW)
Johnson/Irvin Ridge	Fed 29-15*	8.5 miles (8.0 miles of ROW)
North Leroy	Fed 23-26-20 Fed 21X-26	0.4 miles (0.0 miles of ROW)
Robinson/N. Bullwhacker	Fed No 1-12* Fed No 15-1 David Kincaid No 1 Fed No 31-3* State No 1 Fed No 34-1	12.9 miles (9.1 miles of ROW)
Sawtooth	Fed 1-2 US 9-9 Fed 15-9	0.7 miles (0.0 miles of ROW)
Sherard "E" PA	US 4-27* ¹ US 6-28* US 28-1*	2.5 miles (1.6 miles of ROW)
Sherard/Northwest Leroy	Fed 11-25-19 US 29-10 34-15 State 36-26-19	3.5 miles (2.1 miles of ROW)
Southeast Leroy ²	Fed No P21-23-19N Fed No N27-23-19B Fed No A28-23-19N Fed No 31-23-19 Osburnsen 29-23-19	12.5 miles (8.4 miles of ROW)
W. Bullwhacker ³		5.1 miles (4.5 miles of ROW)
W. Coal Ridge	Fed No 35-24-18A* Fed No. 35-24	1.3 mile (0.3 miles of ROW)
Total	27 wells	52.2 miles (38.8 miles of ROW)

¹ A notice of intent to plug and abandon the US 4-27 well has been approved and the well likely will be plugged during the 2007 field season (spring or summer).

² A previously listed well, Fed L22-23-19N, was plugged and abandoned on June 14, 2006.

³ A previously listed well, Fed No 31-25-20, was plugged and abandoned on October 26, 2005. The referenced pipeline was allowed to remain in place because the BLM has an APD to be drilled in the vicinity of this pipeline/well that was plugged and abandoned.

Recreation

The recreation resources of the Monument are diverse and provide an expanse of opportunities ranging from camping in developed campgrounds to camping in widely dispersed primitive campsites; from taking an upland vehicle tour on a Back Country Byway to taking a float trip down the Missouri River; and from hunting elk in the Breaks to hunting pheasants on river islands. Recreation resources are rich and diverse and provide opportunities for most every type of interest.

Benefits derived from these opportunities are also diverse. Local gateway communities gain economic benefit from a local, regional and national base of visitors. Likewise, visitors benefit from association with the friendly rural lifestyle and slower pace of central Montana's small communities. Another current benefit is the freedom to access public lands within the Monument and the ability to choose from a variety of high quality opportunities and experiences. Educational benefits are also prevalent. The BLM Fort Benton River Management Station/Missouri Breaks Interpretive Center provides educational opportunities to those visiting the Monument. In addition, the BLM web site, a newly revised boater guide and numerous brochures provide the public an opportunity to learn more about the natural and cultural history of the Monument.

Much of the area is remote, and spectacular landforms remain essentially unchanged. Settings vary from riparian corridors to the rolling pine and juniper-covered slopes of the Breaks to expanses of sagebrush flatlands. The contrast and diversity provide for a plentiful wildlife population, numerous recreational opportunities, livestock grazing and multiple use activities. Flowing through the heart of the Monument is the Missouri River. Many of the resources and geologic features described by Lewis and Clark during their epic 1805-06 journey on the river remain virtually unchanged. A boater on the Missouri River may pass cattle grazing operations, or the remains of old homesteads, but visually they find little has changed in 200 years.

Recreation Management Areas

Four recreation management areas (RMAs) are currently within the Monument (the RMAs are being considered for change under the Visitor Use, Services and Infrastructure section of the Alternatives in Chapter 2). The RMAs do not follow a legal boundary. They are simply areas delineated for specific recreation management focus. The RMAs fall into two categories: Special and Extensive.

A Special Recreation Management Area (SRMA) is an area where a commitment of BLM staffing and funding has been made, within the parameters of multiple use, to

provide opportunities for specific recreation activities and experiences on a sustained yield basis. An Extensive RMA is an area where recreation management is only one of several management objectives and where limited commitment of BLM staffing and funding for recreation is required. Extensive RMAs tend toward dispersed recreation opportunities with less development.

South Phillips Special Recreation Management Area – About 48,000 acres of the South Phillips SRMA are located in Phillips County. This SRMA provides hunting, fishing, scenic and wildlife viewing and pleasure driving opportunities.

Judith Extensive Recreation Management Area – The Judith RMA includes about 105,000 acres of BLM land in Fergus and Chouteau Counties. This is an extensive RMA that provides dispersed and unstructured recreational activities.

The Judith River within this RMA provides float boating, hunting, fishing, scenic and wildlife viewing and camping opportunities. The Judith River was evaluated for Wild and Scenic River status and a 27.1 mile segment was studied and found eligible but not suitable for Wild and Scenic River status (BLM 1994b).

North Missouri Breaks Special Recreation Management Area – The North Missouri Breaks SRMA includes about 133,000 acres of BLM land in Chouteau and Blaine Counties.

Upper Missouri River Special Recreation Management Area – The Upper Missouri River SRMA includes about 89,000 acres of BLM land. This SRMA includes the Upper Missouri National Wild and Scenic River.

Upper Missouri River

The dominant recreation resource within the Monument is the 149-mile Upper Missouri National Wild and Scenic River. Each year approximately 6,000 boaters take trips of various lengths ranging from 1 to 10 days and participate in a range of activities using a variety of non-motorized and motorized craft.

Access Points

Major access points to the river include the Chouteau County Fairgrounds Campground and Canoe Launch above Fort Benton, Fort Benton powerboat ramp, Coal Banks Landing, Judith Landing and James Kipp Recreation Area. Lesser-used points include Wood Bottom (Loma), Virgelle Ferry and McClelland/Stafford Ferry. Private land access points also exist.

Developed Sites

Developed sites on the UMNWSR include Level 1, 2 and 3 sites. Dispersed camping opportunities are considered Level 4. For a description of Levels 1-4, see the River Recreation Facilities inset.

The following public sites and facilities support recreation activities in the UMNWSR. The sites are listed in downstream order, beginning at Fort Benton and ending at the James Kipp Recreation Area. The only developed site where fees are currently charged is the James Kipp Recreation Area where a fee is charged for overnight camping. Other Level 1 sites could qualify as expanded amenity fee sites based on guidelines established by the FLREA.

Fort Benton River Management Station/Missouri Breaks Interpretive Center provides opportunities to expand visitors' knowledge about the wide array of special places and resources found within the Monument.

Evans Bend (river mile 5.7) is a primitive boat camp with a metal fire ring.

Senieurs Reach (river mile 16.2) is a primitive boat camp with a metal fire ring.



Coal Banks Landing



Coal Banks Landing

Black Bluff Rapids (river mile 19.2) is a primitive boat camp with a metal fire ring.

Wood Bottom (river mile 20.3) is a developed public access site with a gravel parking area, vault toilet, and informal boat ramp.

Decision Point Interpretive Trail is a developed public access site with a gravel parking area, interpretive kiosk, and interpretive signs on a short hiking trail.

Coal Banks Landing (river mile 41.5) is a developed public access site and campground with tent and RV camping, 13 picnic tables, nine fire rings, two vault toilets, two parking areas, a concrete boat ramp, and a volunteer host contact station. Coal Banks Landing is the primary launch point for visitors who boat on the Missouri River. Reconstruction of the site is planned but not currently scheduled. Reconstruction will include a new potable water system, irrigated lawns, shade shelters, a new log building check-in center, and additional native landscaping and windbreaks.

Little Sandy (river mile 46.7) is a developed boat camp with a vault toilet and two metal fire rings. An administrative road provides access to the site for the purpose of facility maintenance.

Eagle Creek (river mile 55.7) is a developed boat camp with two vault toilets and five metal fire rings. Eagle Creek, located on private land, is part of a recreation easement purchased by the BLM. An administrative road provides access for facility maintenance.

Hole-in-the-Wall (river mile 62.9) is a developed boat camp within a fenced enclosure with two vault toilets, five metal fire rings, and two wooden shade shelters. The site has a non-potable well with a hand pump used to irrigate cottonwood and green ash plantings.

Dark Butte (river mile 68.8) is a primitive boat camp with two metal fire rings and two composting toilets.

Pablo Rapids (river mile 72.8) is a primitive boat camp within an electric fence enclosure. The site has one metal fire ring and a solar panel that supplies power to the fence and power to irrigate cottonwood and green ash plantings.

Slaughter River (river mile 76.8) is a developed boat camp within a fenced enclosure. The site has two vault toilets, one wooden shade shelter and five fire rings.

The Wall (river mile 81.2) is a primitive boat camp within an electric fence enclosure. The site has one metal fire ring and a solar panel that provides power to the fence and power to irrigate cottonwood and green ash plantings.

River Recreation Facilities

Level 1 – Developed public access sites. These sites are accessible by road with a full range of developments that could include parking lots, boat ramps, vault toilets, campsites for tents and RVs and picnic facilities. These sites include Decision Point Interpretive Trail, Chouteau County Fairgrounds Campground and Canoe Launch, Wood Bottom, Coal Banks Landing, Judith Landing, Lower Woodhawk and the James Kipp Recreation Area.

Level 2 – Developed boat camps. These sites are accessible to the public only by boat. The sites could include vault toilets, metal fire rings and occasionally open-air shelters. They include Little Sandy, Eagle Creek, Hole-in-the-Wall and Slaughter River. The BLM has administrative road access to these sites.

Level 3 – Primitive boat camps. These sites are accessible only by boat and could contain a metal fire ring. There are no other developments. These sites include Evans Bend, Senieurs Reach, Black Bluff Rapids, Dark Butte, Pablo Rapids, The Wall, McGarry Bar, Gist Bottom, Cow Island, Upper and Middle Woodhawk and Hideaway.

Level 4 – Dispersed camping opportunities. In addition to the developed sites described above, camping is permissible on any of the 90,000 acres of BLM land adjacent to the river. The absence of development allows opportunities for those seeking a completely primitive experience.

Judith Landing (river mile 88.5) is a developed public access site and campground with a concrete boat ramp, two vault toilets, a volunteer host contact station, 11 picnic tables and nine fire rings.

McGarry Bar (river mile 103.1) is a primitive boat camp with one metal fire ring.

Gist Bottom (river mile 122.4) is a primitive boat camp with one metal fire ring.

Cow Island (river mile 125.6) is a primitive boat camp with two wooden outhouses.

Upper Woodhawk (river mile 129.5) is a primitive boat camp with one metal fire ring.

Middle Woodhawk (river mile 130) is a primitive boat camp with one metal fire ring.

Lower Woodhawk (river mile 131) is a developed public access site and campground with two picnic tables, two fire rings, and one vault toilet.

Hideaway (river mile 136.2) is a primitive boat camp with two metal fire rings.

James Kipp Recreation Area (river mile 149) is a developed public access site and campground. Kipp is an expanded amenity fee area with 34 tent and RV camping sites with picnic tables and fire rings, gravel access roads, eight vault toilets, a concrete boat ramp, RV dump station, volunteer host contact station, interpretive kiosk, and a metal maintenance building.

Sunshine Ridge Overlook is an undeveloped scenic viewing site.

Undeveloped Sites

Undeveloped sites are Level 4 opportunities that exist on BLM land along the Missouri River. Many of these are very popular sites where a rock fire ring and trampling of vegetation denote recreational use. Approximately 119 sites either have rock fire rings or have been identified as potentially suitable for camping. Undeveloped sites provide opportunities for those seeking a primitive camping experience. These sites are generally well dispersed, less crowded and offer small groups a quiet alternative away from developed sites where concentrated use may occur.



Judith Landing



Judith Landing

Visitor Activities

Boating with associated camping and exploring is the predominant use of the UMNWSR and occurs primarily between June and August (Burchfield and Moisey 2000). A typical trip on the Missouri River consists of a group of 6 people in canoes or kayaks paddling four days from Coal Banks Landing to Judith Landing (river mile 41.3 to 88.5) and camping three nights. The majority of overnight camping is accounted for in the White Cliffs section at the Eagle Creek, Slaughter River, Coal Banks Landing, and Hole-in-the-Wall campsites. Other campsites located within this area and having similar levels of development, such as Little Sandy or Dark Butte, are only lightly used. Sites from Judith Landing downriver are also noticeably less used (Burchfield and Moisey 2000).

The shoulder seasons in May and September receive fewer visitors. In April and May, anglers are active, and from September through November hunters become the primary user group and access the corridor from the rim by vehicle and the bottomlands by boat (Burchfield and Moisey 2000).

Hunting is widely dispersed over the UMNWSR, but a significant portion occurs between Judith Landing and the James Kipp Recreation Area, and between Fort Benton and Coal Banks Landing, during the big game and upland game hunting season.

Hiking, hunting and sightseeing are popular activities along several segments of the UMNWSR, and they are particularly popular among floaters who can divide their time on the water with exploratory day hikes near campgrounds or picnic sites. Some areas are attractive for non-technical climbs, such as the Hole-in-the-Wall formation that has an informal trail leading from the minimally developed Hole-in-the-Wall campground. Data for off-site uses has not been collected in the past (Burchfield and Moisey 2000). No designated/managed trails are located along the UMNWSR, but hiking and exploring among the geologic formations is popular.

Characteristics of Visitor Use

Visitor use data is collected throughout the year by means of boater registration. Since 1998, full-time volunteer hosts and a seasonal workforce register boaters at their put-in point from May 1 through September 30. During the shoulder season, data collection efforts rely on boaters self-registering prior to launch.

Information collected on boater registration forms is analyzed and compiled to provide statistics about certain visitor use patterns and characteristics. Statistics and information are compiled in the following categories: number of boaters, number of groups and related group size statistics, number of residents and non-residents,

busiest and slowest launch days, seasonal visitor use distribution, percent of motorized and non-motorized craft, percent of use occurring in each of the three river segments, and percent of use by group type.

The majority of use on the Missouri River occurs in the summer months between June and August. The busiest portion of the season is from June 15 to August 1. However, recreation along the UMNWSR in the spring and fall, particularly during hunting season, is also important to visitors. Data on visitor use are only collected in the summer months, so it is difficult to estimate year-round use levels (Burchfield and Moisey 2000).

Number of Boaters

Historically, use increased from 2,060 registered boaters in 1975 to 3,256 in 1997. During 1998, *Undaunted Courage* by Stephen Ambrose was published, and recorded use levels increased to 4,339 visitors. Use took another large jump in 1999 to 5,442, but since then has been relatively flat, ranging between 5,442 and 6,034 visitors. Use from 1975 through 2006 is reflected in Figure 3.10.

Number of Groups and Related Group Size Statistics

Based on visitor registration from 2002 through 2006, most boaters prefer to travel in small groups, but group sizes range from 1 to 50 people. On the average 1,024 groups register to boat each year and total an average of 5,759 people. Groups of two people register to boat the river with the highest frequency of any group size, averaging 310 groups per year or 31% of total groups registered. Registration data indicates groups of five people or less total 69% of groups, and 20 people or less total 96% of groups. A significant aspect of group size frequency is that while groups of 21 or more boaters comprise only 3.5% of the total groups (an average of 35 groups per year), they comprise an average of 18% of total visitor use, or 1,010 boaters. See Table 3.11 for average group size and other statistics related to visitor use. Group frequency analysis is derived from boater registration data and is available at the BLM Fort Benton River Management office. Frequency analysis is based on boater registration from 2002 through 2006.

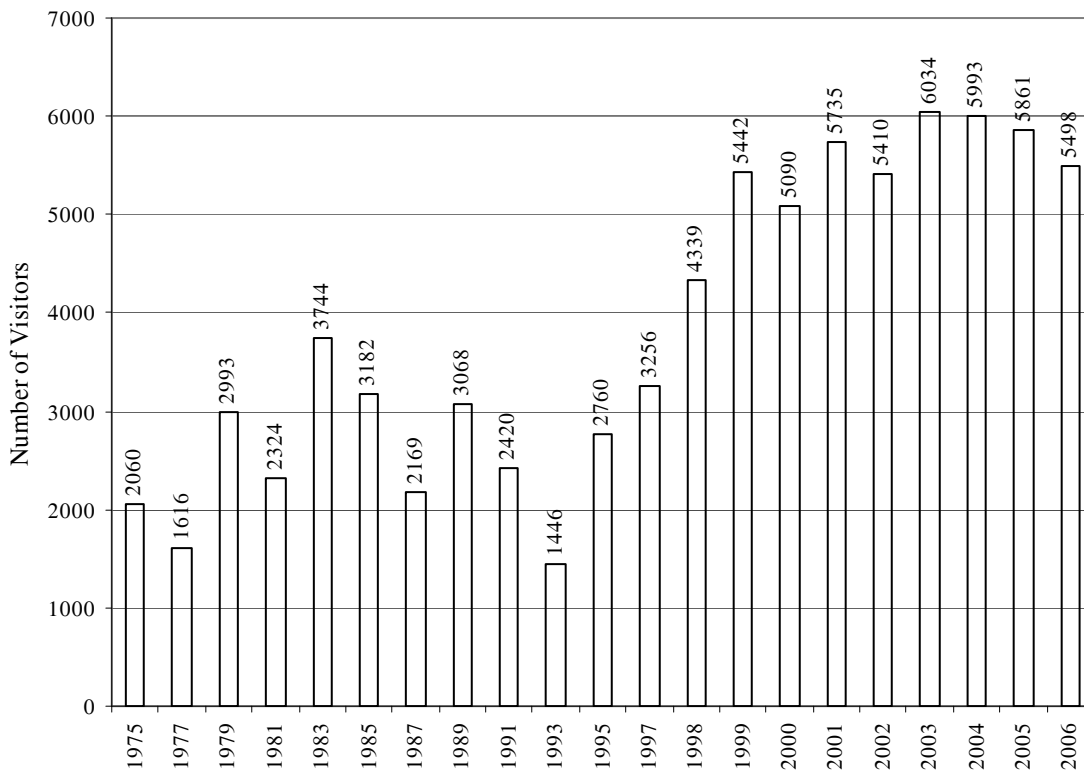
Residency

In 2002, resident and non-residents boaters were evenly divided. In 2003 and 2004, non-residents boaters were the slight majority. In 2005 and 2006 resident boaters were the slight majority. See Table 3.11 for 2002-2006 residency data.

Busiest Launch Days

The busiest launch days are generally Sunday and Monday. Boaters typically use the weekend to travel

Figure 3.10
Upper Missouri River Historic Visitor Use
1975-2006



from their home base, and then launch on Sunday or Monday. On an average trip, boaters would complete their trip during the week and then use the following weekend to return home. See Table 3.11 for 2002-2006 busiest launch days.

Seasonal Visitor Use Distribution

The period from June 15 to August 1 is the busiest portion of the boater season. Figure 3.11 shows average visitor use distribution for the years 2002 through 2006

in weekly increments. The busiest week of the season is generally the third or fourth week of June. On average, 50% of total annual visitor use occurs between June 15 and August 1.

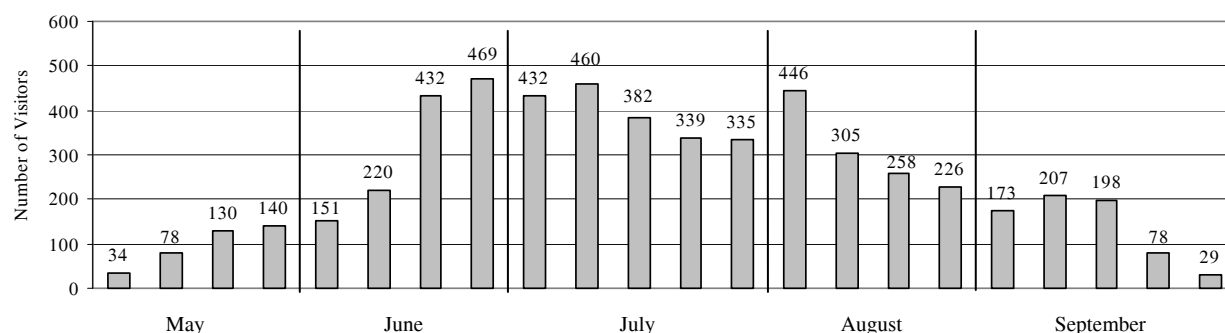
River Segment Visitor Use Distribution

The river can be viewed as three distinct segments. The upper segment extends from Fort Benton to Coal Banks Landing, or river miles 0 to 41.5. The White Cliffs segment, the most extensively used segment, extends

Table 3.11 Upper Missouri River Visitor Use Statistics 2002-2006							
<i>Year</i>	<i>Total Use</i>	<i>Total # of Groups</i>	<i>Ave. Group Size</i>	<i>Montana Residents (Percent)</i>	<i>Busiest Launch Days</i>	<i>Slowest Launch Days</i>	<i>Busiest Month</i>
2002	5,410	889	6.1	51	Sun/Mon	Wed/Thurs	July (32%)
2003	6,034	992	6.1	45	Sun/Tues	Wed/Thurs	July (31%)
2004	5,993	1,069	5.6	46	Sun/Mon	Fri/Sat	July (29%)
2005	5,861	1,084	5.4	51	Sat/Mon	Wed/Thurs	July (28%)
2006	5,498	1,087	5.0	58	Sun/Mon	Thurs/Fri	July (32%)

Source: BLM Boater Registration Data.

Figure 3.11
Upper Missouri River Average Visitor Use Distribution by Week
May – September, 2002 – 2006



from Coal Banks Landing to Judith Landing, or river miles 41.5 to 88.5, and the lower segment extends from Judith Landing to the James Kipp Recreation Area, or river miles 88.5 to 149. Between 2002 and 2006 an average of 73.6% of all registered boaters traveled through the White Cliffs segment of the river. An average of 23% traveled through the upper segment, and 22% through the lower segment. See Table 3.12 for 2002-2006 percentages.

Table 3.12 Upper Missouri River Visitor Use by Segment 2002-2006			
<i>Year</i>	<i>Upper</i>	<i>White Cliffs</i>	<i>Lower</i>
2002	16%	84%	28%
2003	22%	78%	22%
2004	21%	78%	22%
2005	32%	64%	17%
2006	26%	64%	19%

Source: BLM Boater Registration Data.

Watercraft Use

A canoe is the preferred means of transportation on the river. Boaters also use kayaks, rafts, drift boats and a variety of motorized watercraft. Any boat (canoe, raft, jon boat, etc.) launched with a motor is considered a motorized watercraft.

Between 2002 and 2006 an average of 13% of all boats launched were motorized craft. Table 3.13, a summary of motorized and non-motorized watercraft use, demonstrates an upward trend in the use of motorized watercraft between 2002 and 2006 with the number of motorized craft on the river increasing from 198 in 2002 to 458 in 2006. This is a 131% increase in registered motorized craft use in a five-year period.

Table 3.13
Upper Missouri River Watercraft Use – Number of Craft
2002-2006

<i>Year</i>	<i>Total Craft</i>	<i>Motorized</i>	<i>Non-Motorized</i>
2002	2,613	198 (8%)	2,415 (92%)
2003	2,778	202 (7%)	2,576 (93%)
2004	2,772	288 (10%)	2,484 (90%)
2005	2,552	489 (19%)	2,063 (81%)
2006	2,411	458 (19%)	1,953 (81%)

Source: BLM Boater Registration Data.

Table 3.14 shows the 2002-2006 motorized watercraft use by segment for the entire year, and Table 3.15 shows the 2002-2006 motorized watercraft use by segment during the downstream no-wake restriction timeframe.

Table 3.14
Upper Missouri River Motorized Watercraft Use by Segment
Entire Year – 2002-2006

<i>Year</i>	<i>Upper</i>	<i>White Cliffs</i>	<i>Lower</i>
2002	37 (19%)	167 (84%)	69 (35%)
2003	50 (25%)	162 (80%)	60 (30%)
2004	70 (24%)	253 (88%)	107 (37%)
2005	277 (57%)	256 (52%)	90 (18%)
2006	209 (46%)	281 (61%)	165 (36%)

Source: BLM Boater Registration Data

Table 3.15 Upper Missouri River Motorized Watercraft Use by Segment Downstream No-Wake Restriction Timeframe (Saturday Before Memorial Day to Sunday After Labor Day) 2002-2006			
<i>Year</i>	<i>Upper</i>	<i>White Cliffs</i>	<i>Lower</i>
2002	22 (13%)	145 (83%)	68 (39%)
2003	44 (25)%	145 (82%)	55 (31%)
2004	47 (20%)	207 (89%)	88 (38)%
2005	82 (31)%	181 (69%)	55 (21%)
2006	71 (28)%	190 (75%)	114 (45%)

Source: BLM Boater Registration Data

Motorized craft launching or taking out at Coal Banks or Judith Landing are counted in two segments. For example, Table 3.16 (entire year table) indicates 39 motorized boats launched and took out at Virgelle/Coal Banks Landing in 2006. Because Coal Banks is the end point of the upper segment and start point of the White Cliff segment, and because motorized boats can travel in both directions from the site, they are counted in both segments for the purpose of distribution analysis. During the same timeframe 84 motorized craft launched from Coal Banks Landing, but took out at Judith Landing. Those craft are included only in the White Cliff segment count. If a craft launches at Coal Banks Landing and takes out at Kipp, they are counted one time in the White Cliff segment and one time in the lower segment.

Launches from Judith Landing are counted in the same manner for distribution analysis. Judith is the end point of the White Cliff segment and the starting point of the lower segment. Table 3.16 (entire year) indicates 134 boats launched and took out at Judith Landing in 2006. Because motorized boats can travel in both directions from the site, they are counted in the White Cliffs segment and the lower segment. To determine the number of boats that went through the entire length of the lower segment, the number of take-outs can be counted under the James Kipp Recreation Area column for a particular year. In 2006, 21 motorized boats traveled the entire length of the lower segment. For the same year, but during the motorboat restriction timeframe (5/27 through 9/10), 14 motorized craft traveled the entire lower segment. See Table 3.17 (restriction timeframe).



Boaters on the Upper Missouri River

Table 3.16 Motorized Watercraft Use by Put-In and Take-Out Location Entire Year – 2002-2006								
	<i>Take-Out Location</i>							
<i>Put-In Location</i>	<i>Fort Benton Boat Ramp</i>	<i>Loma/Wood Bottom Bridge</i>	<i>Virgelle/Coal Banks Landing</i>	<i>Judith Landing</i>	<i>McClelland/Stafford Ferry</i>	<i>James Kipp Recreation Area</i>	<i>Other</i>	<i>Grand Total</i>
Fort Benton Fairgrounds								
2002	0	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0	0
2005	2	0	0	0	0	1	0	3
2006	0	0	1	1	0	0	0	2
Fort Benton Boat Ramp								
2002	4	2	0	1	0	1	0	8
2003	7	3	1	1	0	6	1	19
2004	6	0	3	1	0	4	1	15
2005	57	16	2	2	0	4	1	82
2006	51	4	2	2	0	4	1	64

Table 3.16
Motorized Watercraft Use by Put-In and Take-Out Location
Entire Year – 2002-2006

	<i>Take-Out Location</i>							
<i>Put-In Location</i>	<i>Fort Benton Boat Ramp</i>	<i>Loma/Wood Bottom Bridge</i>	<i>Virgelle/Coal Banks Landing</i>	<i>Judith Landing</i>	<i>McClelland/Stafford Ferry</i>	<i>James Kipp Recreation Area</i>	<i>Other</i>	<i>Grand Total</i>
Loma/Wood Bottom Bridge								
2002	0	3	1	4	0	0	0	8
2003	0	3	0	0	0	2	2	7
2004	0	9	1	10	0	0	0	20
2005	1	137	0	5	0	1	0	144
2006	0	96	1	7	0	1	0	105
Virgelle/Coal Banks Landing								
2002	0	0	21	92	7	11	1	132
2003	0	1	26	91	8	15	2	143
2004	0	0	42	105	6	16	1	170
2005	0	0	44	122	5	4	4	179
2006	0	0	39	84	2	7	2	134
Judith Landing								
2002	0	0	0	30	3	17	0	50
2003	0	0	0	13	2	14	1	30
2004	0	0	0	69	0	11	1	81
2005	0	2	3	64	3	8	0	80
2006	0	0	0	134	8	9	0	151
McClelland/Stafford Ferry								
2002	0	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0	0
2005	0	0	0	1	0	0	0	1
2006	0	0	0	0	0	0	0	0
James Kipp Recreation Area								
2002	0	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0
Other								
2002	0	0	0	0	0	0	0	0
2003	0	0	0	3	0	0	0	3
2004	0	0	1	1	0	0	0	2
2005	0	0	0	0	0	0	0	0
2006	0	0	0	1	0	0	1	2

Source: BLM Boater Registration Data.

Table 3.17 Motorized Watercraft Use by Put-In and Take-Out Location Downstream No-Wake Restriction Timeframe (Saturday Before Memorial Day to Sunday After Labor Day) 2002-2006								
	<i>Take-Out Location</i>							
<i>Put-In Location</i>	<i>Fort Benton Boat Ramp</i>	<i>Loma/Wood Bottom Bridge</i>	<i>Virgelle/Coal Banks Landing</i>	<i>Judith Landing</i>	<i>McClelland/Stafford Ferry</i>	<i>James Kipp Recreation Area</i>	<i>Other</i>	<i>Grand Total</i>
Fort Benton Fairgrounds								
2002 (5/25-9/8)	0	0	0	0	0	0	0	0
2003 (5/24-9/7)	0	0	0	0	0	0	0	0
2004 (5/29-9/12)	0	0	0	0	0	0	0	0
2005 (5/28-9/11)	2	0	0	0	0	0	0	2
2006 (5/27-9/10)	0	0	0	1	0	0	0	1
Fort Benton Boat Ramp								
2002 (5/25-9/8)	3	2	0	1	0	1	0	7
2003 (5/24-9/7)	4	3	0	1	0	5	1	14
2004 (5/27-9/12)	4	0	2	1	0	2	1	10
2005 (5/28-9/11)	18	15	1	2	0	4	1	41
2006 (5/27-9/10)	19	1	1	2	0	3	0	26
Loma/Wood Bottom Bridge								
2002 (5/25-9/8)	0	3	1	4	0	0	0	8
2003 (5/24-9/7)	0	3	0	0	0	2	2	7
2004 (5/29-9/12)	0	5	1	9	0	0	0	15
2005 (5/28-9/11)	1	33	0	5	0	1	0	40
2006 (5/27-9/10)	0	26	1	6	0	1	0	34
Virgelle/Coal Banks Landing								
2002 (5/25-9/8)	0	0	11	81	7	11	1	111
2003 (5/24-9/7)	0	0	17	86	7	14	2	126
2004 (5/29-9/12)	0	0	23	98	5	16	0	142
2005 (5/28-9/11)	0	0	28	98	5	4	1	136
2006 (5/27-9/10)	0	0	10	70	2	5	1	88
Judith Landing								
2002 (5/25-9/8)	0	0	0	29	3	17	0	49
2003 (5/24-9/7)	0	0	0	13	2	12	0	27
2004 (5/29-9/12)	0	0	0	53	0	11	1	65
2005 (5/28-9/11)	0	0	3	34	2	5	0	44
2006 (5/27-9/10)	0	0	0	90	8	5	0	103
McClelland/Stafford Ferry								
2002 (5/25-9/8)	0	0	0	0	0	0	0	0
2003 (5/24-9/7)	0	0	0	0	0	0	0	0
2004 (5/29-9/12)	0	0	0	0	0	0	0	0
2005 (5/28-9/11)	0	0	0	1	0	0	0	1
2006 (5/27-9/10)	0	0	0	0	0	0	0	0

Table 3.17
Motorized Watercraft Use by Put-In and Take-Out Location
Downstream No-Wake Restriction Timeframe
(Saturday Before Memorial Day to Sunday After Labor Day)
2002-2006

	<i>Take-Out Location</i>							
<i>Put-In Location</i>	<i>Fort Benton Boat Ramp</i>	<i>Loma/Wood Bottom Bridge</i>	<i>Virgelle/Coal Banks Landing</i>	<i>Judith Landing</i>	<i>McClelland/Stafford Ferry</i>	<i>James Kipp Recreation Area</i>	<i>Other</i>	<i>Grand Total</i>
James Kipp Recreation Area								
2002 (5/27-9/10)	0	0	0	0	0	0	0	0
2003 (5/24-9/7)	0	0	0	0	0	0	0	0
2004 (5/29-9/12)	0	0	0	0	0	0	0	0
2005 (5/27-9/10)	0	0	0	0	0	0	0	0
2006 (5/27-9/10)	0	0	0	0	0	0	0	0
Other								
2002 (5/25-9/8)	0	0	0	0	0	0	0	0
2003 (5/24-9/7)	0	0	0	3	0	0	0	3
2004 (5/27-9/10)	0	0	0	1	0	0	0	1
2005 (5/27-9/10)	0	0	0	0	0	0	0	0
2006 (5/27-9/10)	0	0	0	1	0	0	1	2

Source: BLM Boater Registration Data.

Group Types

Beginning in 2002, visitor registration forms requested boaters identify a user category. Users were separated as guided, organized and private groups. Guided groups were those traveling with a BLM-authorized commercial outfitter. Organized groups were church groups, Boy Scouts, college and university groups, or any other type of formally organized group of users. Private boaters were individuals or groups of individuals that had no formal organized structure and typically were composed of friends and family floating the river. See Table 3.18 for a breakdown of 2002-2006 visitors by group type.

Table 3.18 Upper Missouri River Visitor Use by Group Type 2002-2006			
<i>Year</i>	<i>Commercial</i>	<i>Organized</i>	<i>Private</i>
2002	24%	17%	59%
2003	27%	15%	58%
2004	31%	16%	53%
2005	30%	12%	54%
2006	23%	12%	60%

Source: BLM Boater Registration Data.

Commercial River Use

Commercial outfitters have provided visitor services since prior to the Upper Missouri National Wild and Scenic River designation in 1976. Commercial permits to boat the river are limited by a moratorium to 23 for the Missouri River between Fort Benton and the James Kipp Recreation Area. The moratorium capped Special Recreation Permits (SRPs) at the number issued in 1999. Commercial permittees authorized/permitted by the BLM as part of the moratorium are allowed unlimited trips. In addition, "one-time" commercial permits allowing a one-trip-per-season permit for commercial users or organized groups outside the moratorium but that meet the BLM's definition of commercial use are issued. The number of one-time permits issued has ranged from five to seven since 2004. Commercial trips are an integral part of the visitor use pattern and provide opportunities for those without the necessary skill to boat the river or for those who wish to experience additional interpretation of the resources. Fees generated by special recreation permits are returned to the Lewistown Field Office and used to manage and enhance the permit and recreation program (e.g., signing, brochures, educational materials, etc.). Figure 3.12 compares commercial visitor use to overall visitor use from 1997 through 2006.

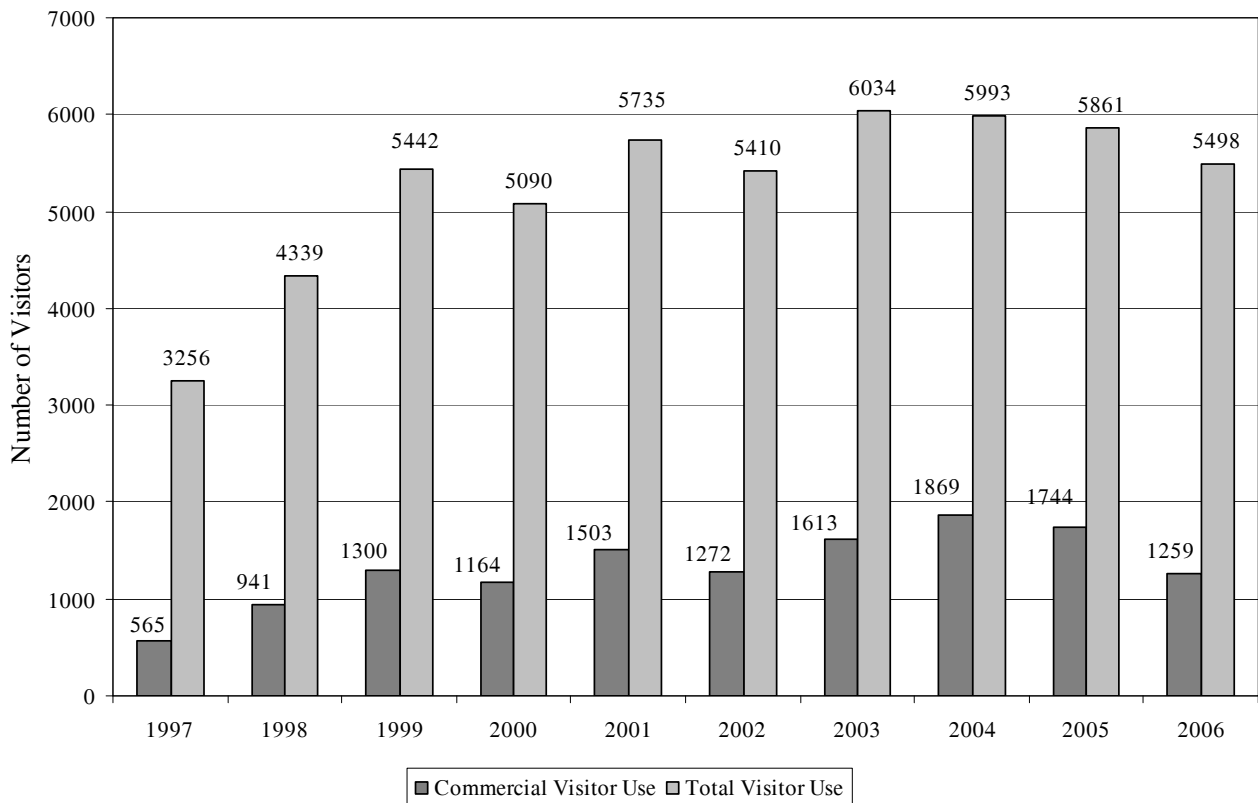
Vending permits are issued for support services on the river. Vending permits are issued to shuttle companies supporting river trip activities by shuttling vehicles from put-in points to take-out points. In 2006 BLM issued one vending permit for a vehicle shuttle service. Many of the 23 moratorium commercial users also perform shuttle services within the context of their commercial river guiding operations.

In addition to commercial services tied directly to boating activities, the BLM also authorizes permits for

commercial tours in the uplands adjacent to the UMNWSR. In 2006, the BLM issued one permit for guided hikes and one permit for vehicle tours.

Special Recreation Permits are also required for all non-commercial special activities occurring in the UMNWSR. Presently, the only non-commercial permit issued to an organized group is for a Lewis and Clark encampment at the James Kipp Recreation Area each year.

Figure 3.12
Comparison of Commercial and Total Upper Missouri River Visitor Use
1997-2006



Commercial visitor use totals from 2004 through 2006 include one-time commercial use numbers. Previous years do not.

Source: BLM Boater Registration Data.

Uplands

Developed sites in the uplands include Level 1, 2 and 3 sites. Dispersed camping opportunities are considered Level 4. For a description of Levels 1-4, see the Upland Recreation Facilities inset.

Most of the upland recreation activity is big game hunting for mule deer, elk, and bighorn sheep. It is not uncommon for hunters to come to the area and camp out for extended weekends and, occasionally, for a week at a time. The Bullwhacker area is a destination hunting location for residents and non-residents alike because of the block of BLM land.

The MFWP Hunting District (HD) 680 includes all of the Monument area north of the Missouri between Cow Creek and the Marias River at Loma. For bighorn sheep in HD 680, for the last 5 years (2002-2006), there have been an average of 13 hunters with either sex licenses and an average of 26 hunters with ewe licenses each year. Average number of hunter days per year was 47 for the ewe hunters and 53 for the ram hunters. The average sheep harvest per year was 14 ewes and 11 rams. For deer hunting in HD 680 for the years 2001, 2002, 2003 and 2005 the average per year was 670 deer hunters, 2,863 hunter days, and 453 harvested deer. For elk hunting in HD 680 for the last several years there have been about 25 hunters, 100 hunter days, and between 5 and 10 elk harvested each year. The remainder of the Monument north of the Missouri River is within HD 621 but covers only a small portion of the Monument. The vast majority of deer and elk hunting in this area occurs outside the Monument.

The south side of the Missouri River is within HD 471, 426 and 417 for deer and elk. HD 471 typically has about 3,500 hunter days for deer annually with an average and for years 2001, 2002, 2003 and 2005 of 580 deer harvested.



Missouri River Breaks

Upland Recreation Facilities

Level 1 – Developed public access sites. Recreation sites where a high level of infrastructure development could include campsites, parking lots, vault toilets, interpretive signs, campground host facilities, tree plantings, picnic tables, waste facilities and other infrastructure improvements that accommodate the transition from highway to collector roads. Sites would be marked on a map. An example of a Level 1 site is James Kipp Recreation Area on the river.

Level 2 – Developed upland sites. Campsites, trailheads, scenic overlooks and reservoirs where moderate levels of infrastructure development could include metal fire rings, vault toilets, and improved gravel parking areas. Interpretive signs and information boards may be present but would be much less obtrusive than at Level 1 sites and would blend well with natural surroundings. Sites would be marked on a map. Examples of Level 2 sites are FR Reservoir, Butch Reservoir, Spencer Road Overlook, Gazob Reservoir, Gilmore Cabin, Snake Point Overlook and Sunshine Ridge Overlook.

Level 3 – Primitive campsites. Pull-out sites immediately adjacent to a resource road that could contain a fire ring and minimal signing, but no other infrastructure.

Level 4 – Dispersed camping opportunities. This would be the utilization of public land in a natural state for dispersed, undeveloped camping. These areas may be accessible by motorized or non-motorized travel. There would be no infrastructure in these areas.

Hiking occurs mostly in the summer but has been increasing in all seasons. Hiking activity can be extended day trips, but until recently, most amounted to day hikes from existing roads or trails where camping occurs on undeveloped sites. No organized hiking trail network exists, which is one of the attractions of the area – providing a “search and discover” experience. Other attractions are historic sites, scenery, wildlife viewing, and solitude.

Motor touring/sightseeing is becoming more common in the summer season, especially on the Missouri Breaks Back Country Byway. Other attractions include the Spencer Road Overlook on the Nez Perce National Historic Trail, Snake Point Overlook on the Lewis and Clark National Historic Trail, and the Gilmore Cabin.

A few reservoirs have been planted with fish and will be small sport fisheries for the useful life of the reservoirs. This includes Butch Reservoir and Gazob Reservoir.

Private pilots occasionally use remote backcountry airstrips in the Monument for day stopovers with short day hikes.

Christmas tree cutting is an occasional recreation activity in the Bullwhacker and Cow Creek areas.

Twelve commercial outfitters (hunting) currently receive an SRP to operate on an annual basis. No limits are placed on the number of SRPs issued or the number of trips per operator. Fees generated by special recreation permits are returned to the Lewistown Field Office and used to manage and enhance the permit and recreation program (e.g., signing, brochures, educational materials, etc.).

Historically, between one and five non-commercial permits are issued annually for organized group recreation activities (e.g., Nez Perce trail ride). No limits are placed on the number of non-commercial permits issued.

Transportation

A motorized travel and transportation system currently exists to provide resource management and visitor services needs to and/or within the Monument. The travel plan inventory that was conducted in 2002 and 2004 pertains to all modes of transportation from aircraft to motorized vehicles including ATVs/ motorbikes. The inventory identified: a) existing small fixed wing aircraft landing strips, b) existing transportation routes and related facilities including cattleguards and culverts, c) length of route, d) whether the existing or designated route is improved or unimproved, e) type of road surface (aggregate or soil), f) double lane, single lane or two-track, g) legal access or permission required, and h) destination (end point) associated with the route.

BLM Roads

A road is a linear route segment that can be created by the passage of vehicles (two-track); constructed; improved; or maintained for motorized travel. The following specifications were used to determine which routes would be inventoried for the Monument transportation plan database:

Motorized travel is not considered cross-country (off-road) on BLM land when:

- The motorized vehicle uses constructed roads that are maintained by the BLM. Constructed roads are often characterized with cut and fill slopes.
- The motorized vehicle use is on clearly evident two-track routes with regular travel and continuous passage of motorized vehicles over a period of years. A two-track is where perennial vegetation is devoid or scarce, or where wheel tracks are continuous depressions in the soil yet evident to the casual observer and are vegetated.

Roads Inventory

A two-person seasonal inventory crew collected data on 436 miles of BLM roads (a total of 759 miles for all roads) during the summer of 2002 for the east half of the Monument, and another seasonal crew in 2004 collected additional information on 44 miles of BLM roads (a total of 81 miles for all roads) in the west half. Information on another 125 miles of BLM roads was obtained from existing data. The BLM roads in the Monument total 605 miles. A GPS Trimble unit with satellite connections was used to document the road data. Map 4 shows the existing road system.

BLM Road Categories

BLM roads are classified into three categories: collector roads, local roads, and resource roads (BLM Manual 9113). Resource roads include the unimproved or two-track routes and vehicle ways in the WSAs. There are 556 miles of resource roads, which accounts for the majority of the roads inventoried within the Monument. A description of each category of road is stated below.

Collector Roads

These Bureau roads normally provide primary access to large blocks of land, and connect with or are extensions of a public road system. Collector roads accommodate mixed traffic and serve many uses. They generally receive the highest volume of traffic of all the roads in the Bureau road system. User cost, safety, comfort, and travel time are primary road management considerations. Collector roads usually require application of the highest standards used by the Bureau. As a result, they have the potential for creating substantial environmental impacts and often require complex mitigation procedures. See Chapter 2 for a list of designated BLM collector roads and assigned maintenance levels.

Local Roads

These Bureau roads normally serve a smaller area than collectors, and connect to collectors or a public road system. Local roads receive lower volumes, carry fewer traffic types, and generally serve fewer uses. User cost, comfort, and travel time are secondary to construction and maintenance cost considerations. Low volume local roads in mountainous terrain, where operating speed is reduced by effect of terrain, may be single-lane roads with turnouts. Environmental impacts are reduced as steeper grades, sharper curves, and lower design speeds than would be permissible on collector roads are allowable. See Chapter 2 for a list of designated BLM local roads and assigned maintenance levels.

Resource Roads

These Bureau roads normally are spur roads that provide point access and connect to local or collector roads. They carry very low volume and accommodate only one or two types of use. This category of roads includes the two-track roads and vehicle way routes found in the Monument. Use restrictions are applied to prevent conflicts between users needing the road and users attracted to the road. The location and design of these roads are governed by environmental compatibility and minimizing Bureau costs, with minimal consideration for user cost, comfort, or travel time. See Chapter 2 for a list of designated BLM resource roads and assigned maintenance levels.

BLM Road Maintenance Levels

Every BLM road in the Facilities Inventory and Maintenance Management System (FIMMS) is assigned a maintenance level from Level 1 to Level 5, as described below. See Chapter 2 for a list of BLM roads and additional information on assigned maintenance levels.



Resource Road

Level 1 – This level is assigned to roads where minimum maintenance is required to protect adjacent lands and resource values. These roads are no longer needed and are closed to traffic. The objective is to remove these roads from the transportation system.

Level 2 – This level is assigned to roads where the management objectives require the road to be opened for limited traffic. Typically, these roads are passable by high-clearance vehicles and include two-track roads.

Level 3 – This level is assigned to roads where management objectives require the road to be open seasonally or year-round for commercial, recreation, or high volume administrative access. Typically, these roads are natural or aggregate surfaced, but may include low use bituminous surfaced roads. These roads have defined cross sections with drainage structures (e.g.,

rolling dips, culverts, or ditches). These roads may be negotiated by passenger cars traveling at prudent speeds. User comfort and convenience are not considered a high priority.

Level 4 – This level is assigned to roads where management objectives require the road to be open all year (except may be closed or have limited access due to snow conditions) and to connect major administrative features (recreation sites, local road systems, administrative sites, etc.) to county, state, or federal roads. Typically, these roads are single or double lane, aggregate or bituminous surface, with a higher volume of commercial and recreational traffic than administrative traffic.

Level 5 – This level is assigned to roads where management objectives require the road to be open all year and are the highest traffic volume roads of the transportation system.



Resource Road

Montana Department of Natural Resources and Conservation (DNRC) Roads (State Land)

Seven segments of state land roads are designated open for motorized travel. These provide public access along five BLM roads: Bullwhacker, Antelope Ridge, Duvall Trail, Middle Two Calf spur, and Middleton. Also, BLM has six easements from DNRC that provide public access along three BLM roads: Middle Two Calf, Woodhawk Trail and Butch Camp (Table 3.20). Another easement provides access for the Cow Island road north of the Monument.

County Roads

The county commissioners for Blaine, Chouteau, Fergus, and Phillips Counties have identified county roads that provide public access routes to or within the Monument (Table 3.19) along with documentation to verify the designations.

<p align="center">Table 3.19 County Public Access Routes to or within the Monument</p>			
<i>Blaine County</i>	<i>Chouteau County</i>	<i>Fergus County</i>	<i>Phillips County</i>
Birdtail Road Cow Island Road Lloyd Road Power Plant Ferry Road Bull Creek Road	Butte View Road Clear Lake Road Eagleton Road Eight Mile Bench Road Flat Creek Road Gardiner Road Graceville Road Hopp Road Judith Landing Road Loma Bridge Road Panton Road Rowe Bench Road Sheep Coulee Road Twin Lakes Road Virgelle Ferry Road White Rocks Road	DY Trail Knox Ridge Road McClelland (Lloyd)/ Stafford Ferry Road PN Road Whiskey Ridge Road	Bull Creek Road Power Plant Ferry Road

U.S. Fish and Wildlife Service Roads

The routes for the Charles M. Russell National Wildlife Refuge include the Knox Ridge Road (segment #209) westward from the James Kipp Recreation Area (U.S. Highway 191) to the Monument; the Lower Two Calf Road (segment #307) that provides access to the Missouri Breaks Back Country Byway route along the UMNWSR; and the Mitchell Crossing Road (segment #850) that provides access to the Knox Ridge road from the south and access from the north to Armells Creek, Fargo Coulee, and the Mabee Road in the southeast portion of the Monument.

Fort Belknap Indian Reservation

The route on the Fort Belknap Reservation includes the Hays East Road to U.S. Highway 191, southwest of Hays and Lodgepole.

State Highways

These routes include U.S. 87 on the west end, Montana Secondary 236 in the middle, and U.S. 191 on the east end of the Monument area.

Easements Providing Access to and Within the Monument

The BLM holds 16 easements for public access along seven roads that cross state and private land as shown in Table 3.20.

Aviation

Ten backcountry, primitive airstrips are located on BLM land within the east half of the Monument (Map 4). The airspace in which these grass airstrips are located is associated with the Hays Military Operations Plan for the U.S. Department of Defense military aircraft maneuvers.

Eight small aircraft landing strips have been identified on the north side of the Missouri River in Blaine County:

- Black Butte North
- Black Butte South
- Bullwhacker
- Cow Creek
- Ervin Ridge
- Left Coulee
- Log Cabin
- Roadside

The other two are located on the south side of the Missouri River in Fergus County:

- Knox Ridge
- Woodhawk

These airstrips occur on naturally flat ridge tops (benches) in sagebrush grass vegetation. These airstrips were created by the BLM and authorized users of the BLM land for various management, administrative and safety purposes. All are grass surface. No cut/fill or hauling in of surface material was used on any of these airstrips. All are primitive in nature not having strip markers or any other infrastructure.

Table 3.20 BLM-Held Easements			
<i>Serial #</i>	<i>Road Name</i>	<i>Legal Description</i>	<i>Grantor</i>
M20515	Middle Two Calf	T22N R21E, sec. 13: NENE	State of Montana (DNRC)
M20516	Middle Two Calf	T22N R21E, sec. 12: S2SE	State of Montana (DNRC)
M20517	Middle Two Calf	T22N R22E, sec. 16: S2SW	State of Montana (DNRC)
M78843	Cow Island	T26N R19E, sec. 36: N2, SE	State of Montana (DNRC)
M79484	Butch Camp	T26N R20E, sec. 36: SWSW	State of Montana (DNRC)
M79681	Woodhawk Trail	T23N R21E, sec. 16: E2	State of Montana (DNRC)
M07905	Knox Ridge	T21N R21E, sec. 7: Lot 2, SENW	Browning
M07906	Knox Ridge	T21N R21E, sec. 7: Lot 3, SW	Lusted
M07929	Knox Ridge	T21N R22E, sec. 9: S2SW	Bachhuber
M07931	Knox Ridge	T21N R22E, sec. 9: S2SE sec. 10: SWSW	Spears, et al.
M07933	Knox Ridge	T21N R21E, sec. 7: 2NE, NENW sec. 8: NWNE, N2NW sec. 10: NWNW, S2NW, NESW sec. 13: Lot 2, S2NE sec. 14: N2N2 T21N R22E, sec. 8: SESE sec. 10: SESW, S2SE sec. 11: S2SW, N2SE, SWSE sec. 17: NENW, S2NW, NWSW sec. 18: S2N2, NESE	Ward
M07934	Knox Ridge	T21N R21E, sec. 10: NWSE, E2SE sec. 15: NENE	Smith, et al.
M10444	Woodhawk Trail	T23N R21E, sec. 28: SWSW sec. 29: SESE sec. 32: NENE	Arthur
M77581	Cow Creek Crossing (Cow Island)	T25N R21E, sec. 5: Lot 1, 2, SWNE T26N R21E, sec. 28: SESW sec. 33: W2NW, NWSW	Liddle
M77582	Coal Mine Coulee	T26N R19E, sec. 34: S2SE sec. 35: S2, SENE T26N R20E, sec. 34: E2SW, S2SE	Robinson, et al.
M78473	Woodhawk	T23N R21E, sec. 28: N2SW, SENW	Peterson

The airstrips are suitable for small fixed wing aircraft equipped to land on primitive backcountry airstrips. Current use of these airstrips is by local ranchers for management activities and recreational private pilots flying in to hike and/or camp. The BLM does not have data on how often or how many use days occur on these airstrips. Information provided during scoping, issues identification and continuing through alternative development of the RMP from various sources indicates recreational use is low volume, occurs infrequently in late spring through early fall. Take off and landings generally occur in the morning or evening when air conditions are favorable. Day use and overnight camping are the most common use. Both single planes and a few planes flying together use the area.

Cow Creek Airstrip

The Cow Creek airstrip is located in the northern portion of the Monument (T25N, R21E, Section 3) just north of the Cow Creek ACEC. This is one of the longer airstrips in the Monument, about 2,250 feet, and can handle multi-engine fixed wing aircraft. Vehicle access to the airstrip is from the Spencer Cow Camp road. The airstrip is also part of a loop road off the Spencer Cow Camp road. The airstrip provides access to the northern portion of the Cow Creek ACEC and Cow Creek WSA. The airstrip is not within the ACEC or WSA. The airstrip is identified on aerial mapping photos from the 1950s and is also identified on the Bullwhacker wilderness inventory map that was completed in 1978.

Left Coulee Airstrip

The Left Coulee airstrip is located in the northern portion of the Monument (T25N, R21E, Sections 28 and 29) just west of the Cow Creek ACEC. This airstrip is about 1,850 feet long. Vehicle access to the airstrip is from the Bullwhacker road. This airstrip is part of the two road segments leading off the Bullwhacker road. This airstrip provides access to the west side of the Cow Creek ACEC but the airstrip is not within the ACEC. The airstrip is identified on an aerial mapping photo from the 1950s and is also identified on the Bullwhacker wilderness inventory map that was completed in 1978.

Roadside Airstrip

The Roadside Airstrip is located in T25N, R21E, Section 32. This airstrip is about 2,000 feet long and is along side the Bullwhacker road. This airstrip was in existence prior to the Bullwhacker wilderness inventory that was completed in 1978.

Log Cabin Airstrip

The Log Cabin Airstrip is located in T25N, R21E, Section 33. This airstrip is about 1,150 feet long and is

parallel to the Bullwhacker road. The airstrip is about 250 feet from the road. This airstrip was in existence prior to the Bullwhacker wilderness inventory that was completed in 1978.

Bullwhacker Airstrip

The Bullwhacker airstrip is located in T24N, R20E, Section 13. This airstrip is about 1,600 feet long. Vehicle access to the airstrip is from the Bullwhacker road. This airstrip provides access to the Bullwhacker drainages. The airstrip is also the access road leading down a ridge. This airstrip was maintained by BLM until the 1980s. This airstrip has been in existence for at least 51 years. The airstrip is identified on an aerial mapping photo from the 1950s and is also identified on the Bullwhacker wilderness inventory map that was completed in 1978. This airstrip is also identified on the BLM Winifred Surface Management Status Map (1988).

Black Butte North Airstrip

The Black Butte North airstrip is located in T24N, R20E, Section 17. This airstrip is about 1,600 feet long. The airstrip is a portion of the access road on the ridge. This airstrip has been in existence for at least 51 years. The airstrip is identified on an aerial mapping photo from the 1950s and is also identified on the Bullwhacker wilderness inventory map that was completed in 1978 and the BLM Winifred Surface Management Status Map (1988).



Black Butte North Airstrip

Black Butte South Airstrip

The Black Butte South airstrip is located in T24N, R20E, Section 19. This airstrip is about 2,600 feet long and is also part of the access road leading down a ridge. This airstrip has been in existence for at least 51 years. The airstrip is identified on an aerial mapping photo from the 1950s. This airstrip was not identified on the Bullwhacker wilderness inventory that was completed in 1978.

Ervin Ridge Airstrip

The Ervin Ridge Airstrip is located within the Ervin Ridge WSA (T24N, R20E, Section 33). This airstrip is about 1,750 feet long and is a portion of vehicle way number nine in the WSA. This airstrip provides access to the WSA. This airstrip has been in existence for at least 51 years. The airstrip is identified on an aerial mapping photo from the 1950s and is also identified on the Bullwhacker wilderness inventory map that was completed in 1978. The airstrip was addressed in the Missouri Breaks Wilderness Suitability Study EIS and identified as a manmade structure in the Ervin Ridge WSA. This airstrip is also identified on the BLM Winifred Surface Management Status Map (1988).

Knox Ridge Airstrip

The Knox Ridge Airstrip is located near the west end of the CMR National Wildlife Refuge (T21N, R22E, Section 1). This airstrip is about 2,150 feet and is also the access road on a ridge. This airstrip was built and maintained by the BLM in the late 1960s as access for a remote wildland fire facility. The remote fire facility was closed in the 1970s but the airstrip still includes rubber tire tie downs.



Knox Ridge Airstrip

Woodhawk Airstrip

The Woodhawk airstrip is located near a BLM remote automated weather (RAW) station and is within the Upper Missouri National Wild and Scenic River (T23N, R21E, Section 7). The airstrip is about 1,000 feet long. This airstrip was built by the BLM in the early 1970s for increased access to a watersaver. The airstrip was maintained by BLM until 1993.

Fire Management

Wildland Fire Ecology

The landform is a series of drainages and ridges running mostly north to south. The area is made up of rolling upland plateaus, known locally as benches, with moderate to deeply incised canyons. Native vegetation is primarily sagebrush and grasslands on the plateaus, changing to ponderosa pine, Douglas-fir and juniper forests on the canyon slopes. Riparian shrubs and cottonwood trees are found along the Missouri River and in the drainage bottoms throughout the area. Some of the private uplands are in annual cereal crop production, some are in the Conservation Reserve Program maintaining an undisturbed cover of perennial grass, and the remainder is native rangelands.

The entire Breaks area is a fire-adapted ecosystem. For a period of time every year, usually from late May to late July, wet thunderstorms are a regular occurrence and lightning sparks numerous fires. In most cases, these fires remain small due to the moisture present in the thunderstorms and the green vegetation during the late spring and early summer months. The fires that do grow to a larger size (usually less than 500 acres) start in the timbered areas of the Breaks. The larger size fires result from a combination of fuel buildup, drought conditions, and high winds after ignition.

Lightning fires alone do not account for the widespread occurrence of fire and the fire-adapted nature of the vegetation in the Monument area. A growing body of research suggests that for over 10,000 years the vegetation in the northern Great Plains and the Monument area was maintained and manipulated by American Indians' deliberate use of fire (the historical equivalent of prescribed fire). Of the American Indian tribes that frequented the Monument area, Williams (2002) documents deliberate fire use among the Shoshone, Blackfeet, Assiniboine, and Gros Ventre. Early settlers observed Indians setting fires in the Shonkin Creek area (Geraldine Historical Society 1976). The season for these pre-settlement prescribed fires was usually during periods of vegetative dormancy between mid-September and mid-May, and outside the lightning fire season, after late July (Kay 1994). Some post-settlement burning occurred in the late 1800s or early 1900s for land clearing or to improve range forage. Since the early 1900s the deliberate use of fire to maintain desired vegetation and wildlife habitat has been almost non-existent in the Monument area.

Wildland Fire History

Fire history for this area is based on vegetation types in the non-forested areas and fire scar data and tree age classes in the timbered areas. Based on analysis of the

Fergus Triangle and Armells Creek areas (Balison 2002), the beginning of noticeable settlement and active fire suppression was 1911. During the pre-settlement period from 1841-1911, the average fire frequency interval was 7.7 years. The range of actual fire occurrence for this period runs from 2 to 29 years. Most of the fires recorded were low intensity surface fires that killed few trees as multiple fire scars were common and the majority of trees were established in the 1860s.

Current fire history is based on fire reports from 1980 to 2006. During this period, the BLM and cooperating agencies responded to 134 lightning fires and 10 human-caused fires that burned a total of 7,977 acres. The majority of the reported fires occurred in the timber/grass fuel type.

Fire Hazard

Fire could be beneficial in much of this area by regenerating decadent shrubs, reducing the encroachment of juniper into grasslands and forest understory, and reducing the density of ponderosa pine and Douglas-fir in timbered areas. Restoration of the pre-settlement fire regime would improve ecosystem health and resilience; however, unplanned fire under uncontrolled conditions in certain areas could threaten structures on private and BLM land and could result in negative impacts to wildlife habitat and vegetation. Areas of heavy fuel loading such as timbered coulees and brushy draws that have been without fire for 50 to 80 years are most vulnerable to negative impacts from uncontrolled fires.



Armells Prescribed Fire

Wildland-Rural Intermix

Rural intermix sites consist mainly of scattered ranches and recreation areas along the Missouri River. Private ranches are located adjacent to BLM land. Vegetation consists of grass and sagebrush with scattered pockets of timber and croplands near most ranches. Recreation sites along the Missouri River include the Richard Wood

Watchable Wildlife Area, Coal Banks Landing, Judith Landing, McClelland/Stafford Ferry, and the James Kipp Recreation Area.



Armells Prescribed Fire

Special Designations

Upper Missouri National Wild and Scenic River

The Missouri River supported periods of exploration, fur trade, steamboat navigation, military activity, early settlement, development of the livestock and farming industries, and homesteading. Today it provides a great deal of recreation. The scenery along the river is interesting and varied, changing from a broad valley rich in riparian vegetation below Fort Benton, to the unique and beautiful White Cliffs below Coal Banks Landing, to the sharply carved and rugged badlands below Judith Landing, to the rolling pine and juniper covered slopes of the Breaks below Cow Creek. These contrasting habitats result in a diverse and plentiful wildlife population.

Boating the Missouri River just for the sake of being on the water occurs, but the beauty and the solitude along the route are highly important to many visitors. For the history buff, the river is an avenue into the past, providing the opportunity to visit the sites of prehistoric and historic events to try to imagine how it was. Much of the attention given to the Missouri River results from its long and colorful history. For the wildlife enthusiast, especially the bird watcher, the river is a living museum of natural history. For those interested in geology, the river has exposed a fascinating display of Cretaceous age formations and the effects of more recent faulting and volcanic eruptions. Subsequent erosion has created a unique array of strangely beautiful land forms.

The river valley's unique beauty and abundant wildlife have been noted ever since the Lewis and Clark expedition passed through here in 1805 and 1806. In our modern, urbanized society, the area's pristine scenery

and opportunities for solitude and recreation in an unconfined setting are extremely important values.

Formal recognition of the Missouri River's significant recreational values was first provided by the State of Montana in 1966, when the river was designated a component of the Montana Recreation Waterway System. The importance of these values was confirmed in 1976 when the National Wild and Scenic Rivers Act, as amended by Public Law 94-486 (90 Stat. 2327), incorporated the 149-mile segment of the Missouri River from Fort Benton downstream to the Fred Robinson Bridge within the National Wild and Scenic River System.

As required by Congress, the BLM completed a management plan (BLM 1977, 1978 and 1993) that established boundaries; designated portions of the river as wild, scenic or recreational; and developed management guidelines. The boundaries were established as rim-to-rim (or the area seen from the river), except for the portions between Fort Benton and Coal Banks Landing (river mile 0 to 41.3), and within the Charles M. Russell National Wildlife Refuge (river mile 138.8 to 149), where a bank-to-bank boundary was established by Congress. The various portions of the river were designated as outlined in Table 3.21.

The Wild and Scenic Rivers Act, Section 2(b) defines the classifications of wild, scenic and recreational as follows:

Wild: Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.

Scenic: Those rivers or sections of rivers that are free of impoundments, with shorelines or watershed still largely primitive and shorelines largely undeveloped, but accessible in places by roads.

Recreational: Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

A unique provision of the Act (P.L. 94-486) was that the Missouri River also be managed in accordance with the provisions of the Taylor Grazing Act (48 Stat. 1269), as amended (43 U.S.C. 315), under principles of multiple use and sustained yield as long as this management stays consistent with the provisions of the Act (P.L. 94-486) and the Wild and Scenic Rivers Act (P.L. 90-542). Management of the Missouri River is currently guided by the Upper Missouri National Wild and Scenic River Management Plan (BLM 1993). The new River Plan will be updated after this RMP/EIS is finalized.

Lewis and Clark National Historic Trail

The Lewis and Clark National Historic Trail was designated in 1978. The Upper Missouri National Wild and Scenic River is recognized as a premier component of the trail. The expedition spent the better part of 21 days along the Wild and Scenic River during the outbound trek (including more than a week at the Marias River campsite), and Captain Lewis spent an additional four days here during the return trip. Twelve of their outbound campsites have been carefully located as have three of the return campsites.

Table 3.21
Management Classifications and Boundaries for the
Upper Missouri National Wild and Scenic River

<i>River Miles</i>	<i>Place Name</i>	<i>Length (Miles)</i>	<i>Management Classification</i>	<i>Management Boundary</i>
0 to 41.3	Fort Benton to Coal Banks Landing	41.3	Recreational	Bank-to-Bank
41.3 to 52	Coal Banks Landing to Ebersole Bottom	10.7	Recreational	Rim-to-Rim
52 to 85	Ebersole Bottom to Deadman Rapids	33	Wild	Rim-to-Rim
85 to 92	Deadman Rapids to Holmes Rapids	7	Recreational	Rim-to-Rim
92 to 99	Holmes Rapids to Leslie Point	7	Wild	Rim-to-Rim
99 to 104	Leslie Point to Magdall Homestead	5	Scenic	Rim-to-Rim
104 to 128	Magdall Homestead to Cow Island	24	Wild	Rim-to-Rim
128 to 138.8	Cow Island to Grand Island	10.8	Scenic	Rim-to-Rim
138.8 to 149	Grand Island to Fred Robinson Bridge	10.2	Scenic	Bank-to-Bank

Nowhere else along the route of the “Corps of Discovery” are the opportunities better for reading the journals of Lewis and Clark and experiencing the scenes that are described. The magnitude of the undertaking, the stature of the men, and the quality of their work take on new meaning in this little-changed setting.

Nez Perce National Historic Trail

On October 6, 1986, the Nez Perce National Historic Trail was designated, recognizing the national significance of the 1877 conflict that began in Lapwai, Idaho, and ending at the Bears Paw Mountains north of the Monument. In 1990 a comprehensive management plan was approved by the BLM, Forest Service, and National Park Service, with each federal agency responsible for management of the trail on its respective lands.

On their push north toward Canada, the Nez Perce traveled through 70 miles of rough breaks country to Cow Island. The crossing provided easy access to the north bank of the Missouri River. North of the river, the trail up the Cow Creek canyon bottom, and the Cow Island wagon road provided direct access to the foothills of the Bears Paw Mountains where the Nez Perce surrendered on October 5, 1877.

The Nez Perce National Historic Trail intersects the Upper Missouri National Wild and Scenic River corridor in the Cow Island area. Three Congressional designations – Lewis and Clark National Historic Trail, Nez Perce National Historic Trail, and Upper Missouri National Wild and Scenic River – are focused in the same area. About 18.5 miles of the trail are within the Monument.

Wild and Scenic Rivers

Appendix P lists the streams that were assessed for Free-Flowing and Outstanding Remarkable Values. The BLM will adhere to Sections 1(b) and 16(b) of the Wild and Scenic Rivers Act when determining eligibility.

Three streams in the Monument were found to be free-flowing and possessed one or more outstandingly remarkable values: Cow Creek, Dog Creek, and Eagle Creek. The suitability of these streams is addressed in Appendix P and Chapter 2.

Wilderness Characteristics

The passage of Federal Land Policy and Management Act of 1976 (FLPMA) authorized BLM lands to become components of the National Wilderness Preservation System (NWPS) for the first time, making wilderness preservation part of BLM's multiple-use mandate. Section 603 of FLPMA required the Secretary of the

Interior to review all areas of public lands and determine which contained wilderness characteristics, and report these recommendations for proposed new units of the NWPS to the President by October 21, 1991. Since these wilderness reviews of Section 603 have been completed, this section of FLPMA no longer provides direction for BLM. A Record of Decision for Montana was signed in August 1991 by the Secretary of Interior submitting these recommendations to the President.

Though the BLM can no longer create wilderness study areas (i.e., study and recommend areas for wilderness), there is direction in Appendix C of the BLM Land Use Planning Handbook (H-1601-1) to evaluate Wilderness Characteristics during the planning process. The Monument was reviewed to determine if there were any lands with wilderness characteristics based on:

- At least 5,000 contiguous acres of BLM land without roads;
- The imprint of people's work must be substantially unnoticeable; and
- An outstanding opportunity for solitude or primitive and unconfined type of recreation.

Though there were no areas greater than 5,000 acres without roads, 14 areas were identified that did not have roads completely separating the area (however, most of these areas still contained numerous roads within them). The BLM interdisciplinary team reviewed these areas and concluded that most of them had too many developments to be considered for their wilderness characteristics (e.g., roads, natural gas development, range improvements, etc.). The few areas that had a limited amount of roads were thin, long polygons, which limited the opportunities for solitude and primitive and unconfined recreation (in some areas, less than a mile in width).

Wilderness Study Areas

Antelope Creek

The Antelope Creek WSA is on the north side of the Missouri River in Phillips County and contains 12,350 acres of BLM land. It is contiguous on its south side with the Charles M. Russell National Wildlife Refuge (CMR). This WSA is bounded on the north by Fortress Butte, Hideaway Ridge and the Bull Creek Road, and private, state and BLM land; on the west by the Power Plant Ferry Road; on the south by the Missouri River, CMR and private land; and on the east by private land lying adjacent to U.S. Highway 191.

The unit has typical river Breaks topography with steep, highly eroded coulees formed by tributaries that drop toward the Missouri River. Most of the unit is barren or

sparsely vegetated. Where slopes and soil allow, vegetation usually includes short prairie grasses, sagebrush and greasewood. Juniper, ponderosa pine, lodgepole pine and Douglas-fir grow along the coulees, covering about 20-30% of the area. An occasional cottonwood can be found there or along the river.

The rough terrain of Antelope Creek has restricted most manmade features to ridge tops where 12 vehicle ways have provided vehicle access to the WSA. These ways are dispersed throughout, with several radiating out from the eastern boundary of the WSA. The WSA contains one reservoir, but it does not create an impact on the apparent naturalness of the WSA.



Antelope Creek WSA

The few developments in the WSA are used to facilitate livestock grazing and provide hunting access, and would not require substantial rehabilitation if the area became wilderness. The vehicle ways on ridges, used mainly for seasonal hunting or sightseeing, would revegetate from lack of use.

The Antelope Creek WSA has outstanding opportunities for solitude. The rugged terrain, characterized by a number of parallel drainages opening to the Missouri River, screens most activities that may occur on nearby ridge tops. The off-site impacts affecting solitude include vehicle use on the surrounding roads. Traffic volume on the Antelope Creek Road is low during the spring and early summer, but increases substantially during late summer and fall due to use by hunters. The broken topography near the road limits the impacts to areas adjacent to the road. Periodic traffic is visible on the Power Plant Ferry Road along the northern and western borders during the dry summer months, but the traffic only impacts areas within one-half mile of the northern boundary of the WSA.

While no single recreational opportunity was identified as outstanding, the WSA provides a diversity of primitive recreation opportunities including hunting, horseback riding, hiking, photography and rock

climbing. Hunting is currently the most popular activity, normally occurring with vehicles along ridges. The Missouri River is also an important recreational addition. Visitors floating the river can camp along the unit's shoreline, fish from the shore, hike the coulees, and enjoy the outstanding scenery.

Public access into the WSA is available along the Power Plant Ferry Road, the Antelope Creek Road, and from the Missouri River by boat, but most other access routes are controlled by private landowners. Rain or snow can make any of the dirt access roads impassable. Weather conditions normally limit access to May-October or to dry road conditions.

Artifacts of both prehistoric and historic eras may be found in the WSA. In this WSA, 35% of the acreage is within the Upper Missouri National Wild and Scenic River. The area has a scenic designation, which means the area will be managed to preserve the scenic and natural characteristics.

Cow Creek

The Cow Creek WSA lies north of the Missouri River and contains approximately 34,050 acres. The river is the southern boundary of the Cow Creek WSA. Forming the east, west and northern boundary of the WSA are roads, private land and state land, or the natural topographical contours. Boundaries are extremely difficult to locate on the ground except for along the roads.

Most of the terrain is rugged and steep along the numerous drainages that feed into Cow Creek and the Missouri River. The Bull Creek-Winter Creek drainages have spectacular sandstone cliffs forming the drainage walls. In sharp contrast, some parts of the WSA are rolling open prairie, particularly toward the southeast corner. Where slopes and soil allow, the vegetative cover is predominantly short prairie grasses, sagebrush and greasewood. Ponderosa pine, lodgepole pine, Douglas-fir and juniper are prevalent throughout the WSA, with the densest stands growing along the northern end.

A number of vehicle ways, reservoirs, and fences are located on Winter Ridge in the area recommended suitable for wilderness. These developments are screened from view by rolling, hilly terrain, as well as by many trees and shrubs; so altogether this does not impact naturalness from some vantage points. The remainder of the area recommended suitable for wilderness has a natural appearance.

Several developed areas are within parts recommended unsuitable and adversely affect naturalness. A 600-acre area east of Saskatchewan Butte (T25N R23E, Section 31 and T24N R23E, Sections 5, 6, 7 and 8) has two

reservoirs, one diversion dam, three vehicle ways and a power line, all easily visible. The WSA also contains two drilling pads, several miles of vehicle ways, reservoirs, and fences. Most of these features are screened by timber and broken terrain; however, they create an impact on naturalness from some vantage points.

Solitude opportunities are outstanding in the Cow Creek WSA. The topography provides excellent screening. Solitude opportunities are best along Gore, Cabin, and Winter Creeks and the lower reaches of Bull Creek, primarily in areas recommended suitable for wilderness designation. The size of these drainages, combined with their lack of development, supplement solitude. One cherry-stemmed road is in the area recommended suitable for wilderness. Some potential exists for disruption of solitude to persons on or near this road from periodic vehicle use.

Solitude values in the parts of the Cow Creek WSA recommended as non-suitable would be affected by the unit's configuration and three cherry-stemmed roads. A home site is occupied during the summer, and a road is also visible (T25N R23E, Section 31 and T24N R23E, Sections 5 and 6). Visitors to areas outside the major drainages and nearer the perimeter of the WSA, primarily parcels in the WSA that were recommended as nonsuitable, have more potential for human contact.

Recreation in the Cow Creek WSA includes hunting, horseback riding, hiking, photography and rock climbing. Hunting is the most popular activity at the present time. It is normally limited to areas around access roads because of the difficulty of retrieving game. The Missouri River, adjacent to the part of the area recommended as suitable for wilderness, has increased the public's awareness of recreational opportunities in the WSA. People floating the river often stop to hike and explore within the unit. Several good camping sites can be found along ridges or near the river.

Scenic features are a notable attribute of the Cow Creek WSA. Of particular beauty is a 4-mile long, sheer wall of sandstone that lies on the west side of the Winter Creek drainage in a portion of the WSA recommended as suitable for wilderness. Wind and water have carved this wall into many castle-like formations suitable for climbing.

The WSA is also historically rich. The Winter Creek Drainage was used for catching wild horses at the turn of the century. The box canyon above the creek formed a natural corral called Horse Thief Pass. Along this canyon and near Shetland Divide, names are etched in the sandstone that date back to the early 1900s. Additionally, tipi rings, rock cairns, and a buffalo jump indicate that the area was used extensively by early peoples. Along the western boundary, the Nez Perce

Indians traveled north along Cow Creek during their escape attempt to Canada in 1877.

Most public access into the Cow Creek WSA is available along the southern boundary, either via the Missouri River or the Bull Creek Road. Other access is controlled by private landowners. Wet weather and snow normally restrict access to May-October or to dry road conditions.

Dog Creek South

The Dog Creek South WSA consists of about 5,150 acres of BLM land on the south side of the Missouri River in Fergus County. The WSA boundary on the north is the river's edge, and on the south by the Dog Creek Road. Elsewhere, property ownership lines are not easily discernable on the ground.

The WSA is fairly compact, about 5 miles long and 1 to 3 miles wide. Drainages of intermittent streams are extremely steep and are separated by narrow, barren ridges. The WSA contains very little screening vegetation, but topographic screening is abundant due to the rugged river Breaks topography. Since steep slopes run from the overlooking ridges down to the river, visitors would probably be channeled to a few areas along the Missouri River to isolated pockets between minor drainages or along flat ridge tops.

A total of 10 manmade features are found in this WSA. They are mostly scattered and well screened, but one vehicle way (route) is the exception. Traversing the northern end of the unit for about 4.75 miles, this route is easily visible from the river and from the ridge tops. Although the route is revegetating in places through lack of use, it is a major infringement on the naturalness of the WSA's northern end. Mechanical rehabilitation would probably create more damage than if the way were allowed to revegetate over time.

The other manmade features are mostly associated with livestock grazing. Because of the location of most manmade features, boundary modifications would not significantly increase the apparent naturalness of this WSA.

Overall, solitude in this unit is affected by continuing agricultural operations adjacent to the northern and western parts of the Dog Creek South WSA, and these opportunities are limited to isolated drainages in the center of the WSA.

Developments within a few hundred yards of the WSA's southern edge influence solitude because of the dust and noise caused by moving vehicles and people. Extensive farming operations are also readily visible from the WSA, being from 400 yards to 1/2 mile away in much of the unit. From spring to fall, farm vehicles are regularly used on adjacent fields.

Motorized traffic down the Missouri River, and road traffic on Montana Secondary 236 and the PN Bridge across the Missouri further infringe on solitude, adversely affecting approximately 2,000 acres on the north and west sides of the WSA. True solitude is available only in the center and eastern portions of the unit.

The WSA's location on the Missouri River contributes to the primitive recreation opportunities found here that include fishing from the shore, waterfowl hunting, and camping. Other possible recreational uses include hiking, horseback riding, nature study, and photography. Present uses are primarily sightseeing (by vehicle), hunting for mule deer, and camping along the river. The nearness to Montana Secondary 236 traffic and farm-ranch operations in this general area makes the river campsites in the Dog Creek WSA less desirable than other locations along the Missouri River. Some camping sites can be found on the long ridges inside the unit, although the lack of trees and water makes camping there less attractive. Like the other WSAs near the Missouri River, Dog Creek South provides good hunting. Possible detriments to hunting are restricted access through private land, the difficulty of retrieving game, and fluctuating game populations.

The area is remote from population centers and inaccessible in wet or snowy weather. The user season would be from May-October, in dry conditions only. Physical hazards to visitors in the area include rattlesnakes, steep terrain, lack of drinking water, and the difficulty of travel in wet weather. The lack of forest vegetation, outside distractions, narrow, long ridge lines, the channeling of visitors into the deep drainages, and the small size of this WSA all mean the Dog Creek South WSA does not offer outstanding opportunities for wilderness recreation.

Ervin Ridge

The 10,200-acre Ervin Ridge WSA is just north of the Missouri River and 10 miles east of the McClelland/Stafford Ferry Crossing. Nearly 50% of the WSA lies within the UMNWSR. All the land within its border has federal surface and subsurface ownership.

About 10 miles long and 0.25 to 0.75 miles wide, this unit is irregularly shaped. The rugged topography of steep and highly eroded ridge lines tapers to narrow edges before dropping to the Missouri River. The terrain provides solitude, but the steep slopes also channel visitors along the river and to the ridge tops. Where slopes and soils allow, the vegetation cover is predominantly short prairie grasses and sagebrush while 20% of the area has groves of ponderosa and lodgepole pine, juniper and Douglas-fir. An occasional cottonwood is found along the river. Vegetation growing along drainages and on some ridge tops

provides some screening, primarily in the eastern half of the unit.

Solitude in certain parts of the Ervin Ridge WSA is affected by the configuration of this unit, outside impacts, and by two cherry-stemmed roads. Inside the unit, the wilderness user is never more than a mile from the boundary. Farming, vehicle traffic on the boundary, cherry-stemmed roads, and activities around three home sites near the west side are distracting. On the Barnard and Pendell Ridges, intensive wheat farming borders the WSA, while farming operations across the river can be seen from the unit's ridge tops. Motorized traffic on the Missouri River, while slight, is a further infringement on solitude. The best opportunity for solitude is in the southeastern part of the WSA.

Hunting and recreation on the Missouri River are presently the two most common forms of recreational use in the Ervin Ridge WSA. Hunting usually involves vehicles traveling along the ridge tops or the use of boats. Inside the WSA, hunting is a challenge because retrieving game is complicated by the steep slopes.

Other forms of primitive recreation that could occur in the unit include horseback riding, hiking, sightseeing, photography, and shoreline fishing.

The road access to the WSA is through private land on the Ervin and Barnard Ridge roads and by boat from the Missouri River. Public vehicle access is obtained only by the landowners' permission. Wet weather and snow often make these dirt roads impassable and can quickly seal off the area, limiting access to May-October during dry weather.

Although opportunities exist for recreation, the WSA's steep terrain channels use along the river, along coulee bottoms or on finger ridges. The lack of vegetation and drinking water, difficulty of travel during wet weather, and rattlesnakes increase the hazards of recreation in the unit.

Stafford

The 4,800-acre Stafford WSA is just north of the Missouri River between the PN Bridge and McClelland/Stafford Ferry in Chouteau and Blaine Counties. This unit includes 4,346 acres within the Upper Missouri National Wild and Scenic River: 425 acres in the scenic section, 113 acres in the recreational section, and 3,808 acres in the wild section. Parts of the WSA are bounded by the Birch Creek Ridge Road, the Boiler Bottom vehicle way, state land, BLM land, the Missouri River, and private land. All the land within its border has federal surface and subsurface ownership.

The rugged terrain of the Stafford WSA has limited human imprints, which helps retain the natural

appearance. Developments are few and scattered, lying primarily on the unit's periphery. The manmade features are of low significance being substantially unnoticeable. Because of their location, boundary modifications would not significantly increase the apparent naturalness of this WSA.

The few developments inside the unit are mostly associated with livestock grazing. As with all WSAs, facilities would not be rehabilitated if they were found to be unnecessary for grazing management. Vehicle ways that follow ridges and are used primarily for seasonal hunting or sightseeing would revegetate naturally if not used.

The Stafford WSA is long and narrow, stretching 8 miles in length and 0.5 to 1.5 miles in width. It is in a rugged portion of the Missouri Breaks with steep and highly dissected coulees that are often sparsely vegetated. Where slopes and soils permit, vegetation is composed of prairie grasses, sagebrush, and juniper. Patches of cottonwood parallel the river and juniper and pine grow in a few isolated groves.

Since the unit has few tall plants, very little screening is available from vegetation but topographic screening is abundant. Steep slopes running down from ridges overlooking the Missouri River would probably channel visitors into a few areas along the river to isolated pockets between minor drainages or along flat ridge tops. This decreases the opportunity for solitude in this unit.

The opportunity for solitude is also affected by adjacent homes, vehicle use along surrounding roads, boat travel on the river, and four farm-ranch operations next to the WSA. Fields are farmed up to the WSA boundary in the northeast end and other farming operations are within 0.75 miles of the WSA. Farm equipment is occasionally visible and audible during the main recreational season of May-October. The farming operation in Section 13 has an aircraft runway and the operators regularly fly over the WSA.

The county road to the McClelland/Stafford Ferry, immediately across the river from the east end of the Stafford WSA, is well used during the summer. A hayfield and home site are also just opposite the east end of the Stafford WSA, and the sight and sound of its irrigation system is present throughout the summer growing season. On the west end of the Stafford WSA, solitude is reduced by nearby farming operations.

Typical recreational opportunities in the Stafford WSA include horseback riding, hunting, hiking, sightseeing, photography and shoreline fishing. Hunting is the major use, and usually involves vehicles traveling along the ridge tops of the north boundary. Travelers along the Missouri River can find limited campsites along the

shorelines of the WSA and can hike the coulees or enjoy the area scenery.

Although some opportunities exist for primitive recreation, use is limited in various ways. The steep terrain channels use along the river or the finger ridges, while the lack of screening vegetation limits campsites to the few scattered groves of trees along the Missouri River. Rattlesnakes, lack of water and difficulty of travel during wet weather present hazards to the wilderness user.

This WSA, like almost all of the Missouri River Breaks, contains features of scenic and historic value. Steep coulees and clay cliffs offer stark contrast to the Missouri River. Evidence of the area's use by Indians and homesteaders can be found in the WSA, and an old wagon road forms its eastern border.

Woodhawk

The Woodhawk WSA is on the south side of the Missouri River in Fergus County and consists of 8,100 acres of BLM land. This WSA is bounded on the north by Sunshine Spur Road and BLM land; on the west by Woodhawk Trail road, state and BLM land; on the south by the Two Calf and DeMars roads; and on the east by the Missouri River and private land.

The WSA is compact, 4 miles long by 2.5 to 4 miles wide, with the distance from the center to the perimeter about 1.5 to 2 miles. The WSA is typical of broken topography in the Missouri River Breaks. The south slopes are open banded clay supporting short grasses. Two-thirds of the WSA supports ponderosa pine, juniper, and a few Douglas-fir trees. Two major drainages flow east-west into the Missouri River, leaving a deeply eroded landform in their wake.



Woodhawk WSA

A cluster of reservoirs that adversely affect natural values are located in the southern third of the area in

T23N R21E, Sections 25, 26, and 27. The cherry-stemmed DeWeese Ridge Road, that ends 1.5 miles inside the area's boundary, detracts from naturalness in the center of the unit.

The manmade features inside the unit are mostly associated with livestock grazing. Boundary modifications would not significantly increase the WSA's apparent naturalness because the manmade features are dispersed throughout the area.

The DeWeese Ridge Road, located in the middle of the WSA, is on a high, open ridge and is heavily used during the big game hunting season. This road is the only access to the central portion of the area and dead ends in the middle of the WSA. This dead end tends to concentrate both motorized and nonmotorized users, detracting from the wilderness experience. Vehicle traffic is not the only distraction. Farming operations to the south and north are visible and often audible, affecting the overall opportunity for solitude from the high ridges and hilltops.

Primitive recreational possibilities in the unit consist of rock climbing on the cliffs (T23N R21E, Sections 13 and 24), horseback riding on the ridgelines or main drainages, hiking, hunting, and sightseeing. Recreation users presently drive motorized vehicles on DeWeese Ridge Road or on Sunshine Spur Road located in T23N R21E, Sections 1, 2, 11, and 12. These roads are also used for fire control. Floaters use some camping areas along the river, even though no potable water is available in the unit. Good campsites can also be found along DeWeese Ridge in the middle of the WSA. Although access is very good, rain or snow can quickly seal off the area, limiting the user season to May-October in dry conditions. Hunting quality is restricted by the difficulty of game retrieval and by fluctuating game populations. Rattlesnakes and the steep slopes provide hazards to unwary visitors.

The WSA contains several prehistoric occupation sites. In historic times, woodhawkers cut timber there to fuel steamboats on the Missouri River (hence the name of this area), and the unit was probably traversed by Chief Joseph's Nez Perce in their attempt to escape to Canada in 1877.

Cow Creek Area of Critical Environmental Concern (ACEC)

The Cow Creek ACEC is in southeastern Blaine County. Approximately 14,270 acres are inside the unit. Although the majority of the area is BLM land, 4,000 acres (21%) of the creek bottom are privately owned. Three tracts of state-owned land (800 acres) are scattered along the unit's border.

The Cow Creek area contains a portion of the Nez Perce National Historic Trail, a portion of the Lewis and Clark National Historic Trail, the Cow Island Trail, high scenic quality, and important paleontological sites. The Cow Creek emphasis area also overlaps portions of the UMNWSR and the Cow Creek WSA.

A premier portion of the Nez Perce (Nee-Me-Poo) National Historic Trail is in the Cow Creek area. This portion has been recognized as extremely important for several reasons. First, it runs through an area that is largely unchanged since the Nez Perce made their famous journey in 1877. It is also an area where an extensive portion of this trail has remained in federal ownership.

The ACEC also includes a portion of the regionally significant Cow Island Trail. It was the main overland route for carrying persons and goods from the Cow Island Landing to Fort Benton, when the steamboats could not advance upstream due to low water. The scenery of the land is still extremely similar to that period of time. This portion of the trail is no longer used by vehicle traffic. Some abandoned outbuildings still exist in the vicinity of the trail.

The Lewis and Clark National Historic Trail (the Missouri River) forms the southern boundary of the Cow Creek area.

The entire landscape is extremely dissected with steep cliffs and rock outcroppings. Sharp contrasts between the creek bottom and overlooking ridges are evident. The topographic difference in the area can range nearly 800 vertical feet over distances less than 1 mile.

The area has significant paleontological values. Early explorations (1870s-1880s) yielded many new fossils, particularly dinosaurs. Though most were incomplete skeletons, a dinosaur (Triceratops) was found in the Eagle Sandstone at the mouth of Cow Creek.

Social and Economic Conditions

Social Conditions

Below is a discussion on social trends and changing attitudes that affect BLM land management, followed by a focus on the four counties in which the Monument is located (Blaine, Chouteau, Fergus and Phillips) and where the majority of the social effects are expected to occur.

The last part of this section includes discussions of potentially affected groups and individuals for the assessment of social impacts in Chapter 4.

Social Trends and Attitudes

This section focuses on social trends and attitudes that affect BLM land management.

One trend is the increasing popularity of BLM land for recreation. A comprehensive report on recreation by Cordell et al. (1999) indicates demand in the Rocky Mountain West for recreation activities will increase substantially by the year 2020 with nonconsumptive wildlife activities, sightseeing and visiting historic places having the greatest increases. A related trend is the increasing interest in the history of exploration and settlement in the western United States such as the Lewis and Clark Expedition. In a study of visitors to the Fort Benton riverfront area (McMahon 2001), nearly 50% of the respondents indicated they were motivated by an element of Lewis and Clark history to visit the site.

Another trend is a concern to maintain access to BLM land if access through private land is required to reach the BLM land. In addition, the loss of access to some private land, for the general public, is putting more pressure on BLM land. These changes are linked to the pursuit of a quality recreation experience and occur for a variety of reasons such as: lands are purchased for recreation or home sites and closed to others; lands are leased to outfitters for exclusive use; and private land and roads are closed to avoid problems with safety, fire, fences, weeds, litter and open gates.

A third trend that is occurring in the nation and Montana is the aging of the population. In 2000, 14% of the population in Blaine, Chouteau, Fergus, Hill and Phillips Counties was 65 years and over. In the state as a whole, the percentage of population 65 years and over is expected to increase to 25% in 2025. The percentage of people over 65 is actually increasing more rapidly in states like Montana because young people are more likely to leave for advanced education, military service and employment opportunities not available locally.

Changes in the management of BLM land are just one aspect of a broader debate on environmental and resource management that is occurring locally, nationally and globally. Social values for lands and natural resources can take many forms such as commodity, amenity, environmental quality, ecological, recreation, and spiritual health. While the commodity interest has been prevalent in the past, a study examining public attitudes toward ecosystem management in the United States found “generally favorable attitudes toward ecosystem management (defined as maintaining ecosystem health, protecting and restoring biodiversity and ensuring sustainability) among the general public.” (Bengston et al. 2001)

In the rural West, in places where land use has been unrestricted, concern is being expressed by some

individuals and groups regarding the control and management of BLM land. People with these concerns feel that change in BLM land management is being driven by government officials and environmental advocacy groups who do not have a true understanding of the lands or the people living nearby who depend upon these lands for their livelihood and recreation. Of particular concern is the loss of current uses of the land such as livestock grazing and off-highway vehicle use. People with these concerns seek to balance what they consider to be “environmental extremism” with economic and human concerns. They may feel that local elected officials, who deal with their problems on a daily basis, are better equipped to make decisions about BLM land.

In some areas of the rural West, particularly those suitable for recreation, ranches are being sold for recreation uses or subdivided for homes. Some newcomers buy smaller units to farm or ranch but do not depend on an economic return from the property. The newcomers may have different beliefs and values from long-time residents about natural resources and how public lands should be managed. The increased contacts between longtime rural residents and newcomers may challenge the existing way of life.

Social Study Area Counties and Communities

The 2005 population of the social study area (including Blaine, Chouteau, Fergus, and Phillips Counties) was 27,822, a decrease of 6% since 2000. During the decade 1990 to 2000, the study area population grew less than 1%. The social study area population is projected to grow very slightly (1.5%) by 2020. The area is very sparsely settled with 1.7 persons per square mile compared to a figure of 6.2 for the state as a whole. The population of the social study area is 81% white and 17% American Indian. (The remaining 2% includes Blacks, Asians and Pacific Islanders, and people of two or more races.) The American Indian population is concentrated in Blaine County, which is nearly 50% American Indian. The median family income in the social study area is lower than for the state (\$28,382 versus \$33,024), and the percentage of persons below the poverty level is higher (20.6% versus 14.6%). All population figures are from the 2000 Census.

Blaine County, located north of the Missouri River, had a 2005 population of 6,629, a decrease of 5% since 2000. It grew 4% during the decade 1990 to 2000 and is the only social study area county that is projected to grow by 2020. Of the social study area, Blaine County has the lowest percentage of population 65 and over, and the highest percentage of American Indians. Chinook, the county seat, had a 2005 population of 1,299, a decline of 6% since 2000. Blaine County is home to the larger part of the Fort Belknap Indian Reservation. Two reservation

communities are located within 50 miles of the Missouri River. These communities are Hays with a 2000 population of 702, and Lodge Pole with a population of 214. In 2002, Blaine County was home to 588 farms and ranches. The number of farms and ranches increased 14% during the period 1992 to 2002, while the amount of land in farms and ranches and the average size of these operations decreased by 3% and 15%, respectively (USDA 2002). Farming/ranching was the principal occupation of 70% of the farm/ranch operators.

Chouteau County, located in the western part of the social study area, had a 2005 population of 5,463, a decrease of 9% since 2000, that followed a population increase of nearly 10% during the decade 1990 to 2000. The county population is expected to continue to decrease. Fort Benton, the county seat, is home to the BLM Interpretative Center and the place where many floaters enter the Missouri River. Fort Benton had a 2005 population of 1,475 and lost 8% of its population between 2000 and 2005. Other small communities located close to the Missouri River include Big Sandy with a 2005 population of 643. Big Sandy is close to Coal Banks Landing, one of the few developed recreation areas in the Monument. Chouteau County was home to 787 farms and ranches in 2002. The number of farms, amount of land in farms, and average size of the farms has been relatively stable in the recent past (USDA 2002). Farming/ranching was the principal occupation of 85% of the farm/ranch operators.

A survey conducted for the City of Fort Benton (2002) indicated over 70% of the respondents thought it was an excellent or above average place to live. Things people liked best about living in the area included: safe/low crime, small size/small town feeling, the friendly caring people, the quiet and peacefulness, the river, and many other attributes related to the area and its residents. Lack of job opportunities and a stagnant/weak economy were two of the main things respondents did not like about living in the area. Bringing businesses to town and creating jobs to attract young people were two of the things respondents indicated could be done to make Fort Benton a better place to live. Nearly 75% of the respondents had lived in the area more than 10 years.

Fergus County, located south of the Missouri River, had a 2005 population of 11,551. It lost 3% of its population between 2000 and 2005 and is projected to continue to lose population very slowly (with a decrease of less than 1 percent predicted in 2020). Fergus County has the highest percentage of population 65 and over of the social study area counties, and the lowest percentage of American Indians. Lewistown, the county seat, is home to the Monument Headquarters. Lewistown had a 2005 population of 6,099, a decrease of 3% from 2000, Winifred, a ranching community located 14 miles south of the Missouri River, had a 2004 population of 150. Winifred is located on the road to Judith Landing, one of

the few developed recreation areas along the river. In 2002, Fergus County had 830 farms and ranches. The number of farms, amount of land in farms, and average size of the farms has been relatively stable in the recent past (USDA 2002). Farming/ranching was the principal occupation of 69% of the farm/ranch operators.

Phillips County is located north of the river and east of Blaine County. It had a 2005 population of 4,179, a decline of 9% since 2000. It lost over 10% of its population during the decade 1990 to 2000 due to the closing of gold mines in the Zortman and Landusky areas. The county population is expected to continue to decline by over 6 percent by 2020. Malta, the county seat, had a 2005 population of 1,922. Two unincorporated communities in the Little Rockies Mountains, Zortman and Landusky, are located within 50 miles of the Missouri River. In 2002, Phillips County was home to 489 farms and ranches. The number of farms and ranches increased 10% between 1992 and 2002 while the average size decreased 4% (USDA 2002). Farming/ranching was the principal occupation of 72% of the farm/ranch operators.

Table 3.22 lists population and social characteristics for the four counties in the social study area and for the State of Montana as a whole.

Affected Groups and Individuals

Discussions of affected groups and individuals are included to facilitate the assessment of social impacts. The following groups and individuals will be discussed: ranchers and livestock permittees, groups and individuals who give a high priority to resource protection, recreationists, and groups and individuals who give a high priority to resource use, residents of small communities located near the Monument, and American Indians. It should be noted that these groups are not mutually exclusive and examples of households fitting into several categories are likely to be present. This section is based predominately on the information collected during the scoping process, information gathered during past planning efforts and available research.

Most scoping respondents indicated the Missouri Breaks are a very special place to them and are important to their quality of life. Among the things they cited that makes this place a special and unique area are its geology, the opportunities for quiet and solitude, the history of the land, generational ties to the land, and the abundant plants and animals. Although the commenters had many different relationships to the Breaks, there were more commonalities than differences on why this area is considered special. Eisenhower, et al (2000), who studied sense of place related to public land management concluded, "The primary reasons why places on public lands are regarded as special are because of the

environmental features of a place or because of interactions with significant others at the locale.” He also adds, “Emotional attachments to place represent a unique sense of place, one that involves unusually strong sentiments about places and heightened concerns about their management.”

Ranchers and Livestock Permittees

Ranching is an important part of the history, culture and economy of the study area. In 2002 there were 2,694 farms and ranches in the social study area, and farming/ranching was the principal occupation of 75% of these operators.

Gentner and Tanaka (2002) provide a comprehensive classification of public land grazing permittees. One group, identified as “dependent family rancher,” had the highest dependence on ranch income and lowest diversification into other income sources. Gentner and Tanaka found that these ranchers highly “valued family tradition, ranching as a good way to raise a family, living closer to friends and family, and the desire to pass the ranch on to children.” Monument ranchers value this area for the above reasons as well as the grazing opportunities, recreation, and the wild characteristics of the region. Ranchers indicate keeping roads open is very

important to them because they use these roads for family recreation such as hunting, fishing, picnicking, sightseeing, etc., and to reduce the time to get from one place to another in the sparsely settled area in and around the Monument.

There are many challenges facing ranchers today including changes in federal regulations, economic issues, weather, commodity prices, operating expenses, estate planning, financial and business planning, varying goals of family members in the business, trends in agricultural practices, consumer preference and changing land use. Permittees may face increasingly stressful social situations as they try to balance their traditional lifestyles with demands from government agencies and other public users such as recreationists. The comments received from local ranchers during scoping indicated the BLM should maintain current management for cattle grazing and access routes into the Monument. Other issues of concern include weed control, land acquisition, restrictions, water rights issues, potential future policy changes and maintaining access to private lands. According to these commenters, the current farmers and ranchers have maintained the area in a manner that can be appreciated by others just traveling through; these farmers and ranchers would never waste their resource because it would mean an end to a valued way of life.

Table 3.22 Population and Social Characteristics for Counties in the Social Study Area in 2000, 2005						
	<i>Blaine</i>	<i>Chouteau</i>	<i>Fergus</i>	<i>Phillips</i>	<i>4-County Study Area</i>	<i>State of Montana</i>
2005 Population	6,629	5,463	11,551	4,179	27,822	935,670
<i>Change from 2000-2005</i>	<i>-5.4%</i>	<i>-8.5%</i>	<i>-2.9%</i>	<i>-9.2%</i>	<i>-5.6%</i>	<i>3.7%</i>
2000 Population	7,009	5,970	11,893	4,601	29,473	902,195
<i>% Change from 1990-2000</i>	<i>4.2%</i>	<i>9.5%</i>	<i>-1.6%</i>	<i>-10.9%</i>	<i>0.2%</i>	<i>12.9%</i>
Projection 2020	7,150	5,760	11,820	4,310	29,040	1,085,520
<i>Change from 2000-2020</i>	<i>2.0%</i>	<i>-3.5%</i>	<i>-0.6%</i>	<i>-6.3%</i>	<i>1.5%</i>	<i>20.3%</i>
Persons/Sq. Mi. (2000)	1.7	1.5	2.6	0.9	1.7	6.2
<i>65 and Over(2000)</i>	<i>12.9%</i>	<i>17.5%</i>	<i>19.9%</i>	<i>17.6%</i>	<i>17.0%</i>	<i>13.4%</i>
<i>White(2000)</i>	<i>52.6%</i>	<i>84.0%</i>	<i>97.1%</i>	<i>89.4%</i>	<i>80.8%</i>	<i>90.6%</i>
<i>American Indian (2000)</i>	<i>45.4%</i>	<i>14.6%</i>	<i>1.2%</i>	<i>7.6%</i>	<i>17.2%</i>	<i>6.2%</i>
<i>HS Grad (2000)</i>	<i>78.7%</i>	<i>87.1%</i>	<i>86.3%</i>	<i>82.4%</i>	<i>83.6%</i>	<i>87.2%</i>
Median Household Income 1999	\$25,247	\$29,150	\$30,409	\$28,702	\$28,382	\$33,024
<i>Persons Below Poverty Level(1999)</i>	<i>28.1%</i>	<i>20.5%</i>	<i>15.4%</i>	<i>18.3%</i>	<i>20.6%</i>	<i>14.6%</i>

Source: U.S. Census Bureau.

According to the scoping comments:

Some of the farmers and ranchers with private land in the Monument are fourth generation farmers and ranchers, and many others have lived in the area the majority of their lives. One family has lived and grazed cattle along the Missouri River since 1913. Their children have learned to swim and fish in the river, and have been taught to love and care for the land. The proposed management plan will impact these people's ability to make a living, thereby destroying the ranching culture of the area. The road closures will also preclude them from enjoying their traditional family activities. Additionally, as the tax base and tax revenues dwindle, funding to the local schools will dwindle, which will also hinder these families' ability to raise their children in the area.

Our goal is our long-term survival for our ranches, our schools, and communities. That kind of stability is also beneficial to the environment. If our ranches fail, that's when you see trophy homes, hobby ranches, and possible even subdivisions.

Groups and Individuals Who Give a High Priority to Resource Protection

Many people living within and outside the study area, along with a variety of local, regional and national level organizations, have shown a great deal of interest in the plan through input received during the scoping process. Many of these comments focused on protecting wildlife and native plants; historical, archeological, paleontological, geologic and cultural sites; air quality and visual resources. They indicated some ways to protect these features include limiting oil and gas development, recreation infrastructure and roads. They want the Monument to maintain its wild, empty, quiet atmosphere as an alternative to the hectic lives most people lead. These organizations indicate the condition of Monument resources is important because of wildlife, recreation, education, scenic, wilderness, open space and spiritual values, and want these resources to be available in their current condition for future generations. Many indicate that this wildness will become even more valuable over time. They also indicate that the Monument offers a high amenity area that makes all of the surrounding region a more pleasant place to live. It improves the quality of life for people living in nearby cities and the ability of these cities to attract businesses and retain a quality workforce.

According to the scoping comments:

The management plan must not permit development or use that destroys the protective purpose for which the Monument was established. The plan should be designed to protect the undeveloped and wild nature of the land in the Monument. Doing so will enhance and perpetuate the

area's biological, geological and historical treasures. It should be managed so as to maintain the landscape largely as it was when the famous Lewis & Clark expedition traveled the area nearly 200 years ago.

The solitude, and grandeur, wildness and historic significance are wonderful but in danger of disappearing unless BLM creates a comprehensive and well thought out management plan. The wild and scenic stretch belongs to more than just the current generation. It's a living glimpse into the past for future generations.

Recreationists

Recreation is a component of most lifestyles in the study area and is an important element of the overall quality of life for many residents. In addition to local recreation use, recreationists from all over the United States visit the UMNWSR. Recreationists are very diverse groups of people, and changes in recreation management can affect the people who engage in the various activities very differently.

Some comments on recreation concerned the potential loss of activities such as driving OHVs on roads and trails, traveling off road to retrieve game, driving off road to campsites, using motorized watercraft on the Missouri River and using backcountry airstrips. Some commenters indicated that opportunities for these activities are declining elsewhere. For each of these activities, some commenters discussed their importance to the lifestyles of the people who engage in them.

The Capital Trail Vehicle Association (2002), indicated the OHV recreation opportunities offer the following types of enjoyment and rewards for its members: social experience for all types of people, strengthen family relationships, experience the outdoors, experience and respect the natural environment, participate in a healthy and enjoyable sport, experience a variety of opportunities and challenges, and escape from daily routines and pressures.

Scoping comments from OHV proponents included:

Two years ago my sister and I were able to realize the dream of following in the footsteps of Lewis and Clark as they traveled past the incredible landscapes of the White Cliff area on the Missouri River. We are too old to paddle a canoe and traveling by launch was our only option. Please don't take this privilege away from older and handicapped visitors to this beautiful area.

We are greatly concerned about the continued reduction of multiple-use, motorized access and motorized recreation opportunities on public lands and feel that this trend is grossly out of step with the needs of the public. The public lands were designated as multiple-use lands. Management for multiple-use is responsive to the needs of all citizens including motorized recreationists.

Other commenters, many of them river floaters, focused on maintaining a primitive, solitary, nonmotorized Monument recreation experience. Noise is a major issue to many of these users. Some mentioned their concern about the loss of an alternative to the world in which we live, where the noise of engines is all-pervasive, and the need to protect areas where natural quiet can be experienced. Research confirms the importance of the lack of noise to recreationists. According to Gramann (1999), “Many surveys show that quiet, solitude, and natural sounds play important roles in recreation experiences. Recreation users consistently state that escaping noise and enjoying the sounds of nature are among the important reasons they visit natural areas.” In addition, available research indicates support for the restorative effect of natural environments, that they may help foster inner peace and a renewal of mental energy (Hartig et al. 1991).

Scoping commenters indicated:

The increasing use of motorized vehicles in wild areas (land and water) is making it so only the most fit and skilled can get beyond the motors to experience the quiet and peaceful wild. Places like the Missouri River which do not require much skill, strength, or endurance must be saved so the unskilled, the young, the old, and the infirm and disabled can also experience the quiet and peaceful wild. Do not deny them this opportunity.

Keep motorized watercraft out of the Wild and Scenic section of the Missouri River. I know the difference between canoeing in a river that is free from motorboats and jet skis, and one that is plagued with them. When the river is free of motorized traffic, we enjoy the birds and wildlife, and the experience is wonderful. It does not take many motorboats to remove the birds and totally change the experience for floaters and canoeists.

Groups and Individuals Who Give a High Priority to Resource Use

Groups and individuals from both inside and outside the study area have expressed concern about limitations being put on the availability of Monument lands for commercial uses such as oil and gas development, livestock grazing and river use. Maintaining access to public and private lands in the Monument is also an important issue to them as is not restricting the amount or types of river use. They indicate the Monument lands need to be managed to help the survival of local economies and communities. They are concerned that Monument designation may increase financial expenditures for county services such as wildland fire suppression and search and rescue operations. These concerns may be similar to those expressed by ranchers and residents of small communities located near the Monument.

Scoping comments indicated:

Gas infrastructure already exists and minor disturbance is required for drilling. Further exploration should be allowed and development on existing leases should continue. I have seen firsthand the results of the pipeline of the south side of the river, and you would have to point it out to most people. An excellent job of reclamation was accomplished. As for new drilling, the impact is minimal and should continue.

We don't want any restrictions that infringe on economic opportunities or traditional use practices in the Monument. Maintain multiple use. This serves many different interests and has proved successful in the past.

Residents of Small Communities Located Near the Monument

Previous research on the small communities located near the Monument indicates residents feel these communities are very good places to live with safe/low crime rates, small town feeling, friendly caring people, quiet and peacefulness, good recreation opportunities. However many small rural communities, such as Fort Benton, Big Sandy, Chinook, and Winifred, are facing challenges. These communities have continued to lose residents in the last decade or more. Residents are concerned about preserving their current lifestyles and the economic survival of their communities. This leads to concern about any government activity that could affect the local economy. Residents may feel that Monument management is being driven from the outside by government officials and environmental advocacy groups that have little understanding of the local lifestyles and culture.

Local communities use the Monument for a variety of activities that are integral to their lifestyles including hunting, sightseeing, camping, and firewood cutting. The residents of these communities were very active in the scoping process for the Monument and discussed the following concerns: closing roads to the Monument and within the Monument, loss of economic opportunities such as oil and gas development that contribute to their tax base, restrictions on a variety of activities such as motorized use of the river, concerns about the viability of local ranches, etc.

According to two scoping commenters:

It is absolutely crucial that we preserve our ranching communities. They are the personality of the area. The communities of Winifred and Fort Benton—they are the heart. They are Montana. If you really look at it, that's really who we are all about. They have been able to maintain the personality that some of those larger communities have lost.

I, too, as many of you are, am mainly concerned about road closures, emergency response, fire protection, hunting and grazing, protection of private property from trespassing, and the right of private landowners to use their land as currently done and, of course, gas development.

American Indians

Two Indian Reservations are located in the social study area. The Fort Belknap Reservation, located directly northeast of the Monument in Blaine and Phillips Counties, was created in 1888. The Rocky Boy's Reservation, located directly northwest of the Monument in Blaine and Hill Counties, was created in 1916. According to 2000 census data, the Fort Belknap Reservation is home to 2,790 American Indians (Gros Ventre and Assiniboiné Tribes), and the Rocky Boy's Reservation is home to 2,578 American Indians (Chippewa-Cree Tribes).

Other American Indians who have expressed an interest in the Monument include the following:

- Blackfeet (Blackfeet Tribe), located northwest of the Monument and home to 8,507 American Indians.
- Crow (Crow Tribe), located south of the Monument and home to 5,274 American Indians.
- Flathead (Confederated Salish and Kootenai Tribes), located west of the Monument and home to 7,853 American Indians.
- Fort Peck (Assiniboiné and Sioux Tribes), located east of the Monument and home to 6,931 American Indians.

The history of American Indian use of the study area is summarized in the Cultural Resources section of this chapter under Historic Overview. The Upper Missouri National Wild and Scenic River Cultural Resource Management Plan (Knudson 1992), indicates "American Indians have continued to use areas of the Missouri Breaks for traditional religious and other cultural purposes." According to Deaver (1986) the following types of traditional contemporary religious sites may be identifiable in the Monument: vision quest sites, monumental/anthropomorphic/zoomorphic rock features, rock art sites, burials, habitation sites and dance grounds. Plant gathering for religious/ceremonial purposes, and hunting also occur in the Monument. Consultation with the various tribes indicates that they attach value to the Monument and use certain areas for religious and cultural purposes, but it has not resulted in a long list of discrete areas used for traditional purposes.

The Monument is seen by members of different tribes as a place for hunting, fishing, sightseeing, honoring

ancestral ties, commemorating the past and gathering traditional medicine-plants such as sage and Missouri River willows for sweat lodges. Concerns include management of cultural properties, and restrictions such as closing roads to motorized travel. (Hays Public Meeting, 2006 and tribal consultation notes, 2006)

According to two scoping commenters:

I am a tribal member and so is my husband. I have gone down to the tribal office and I have visited with the tribal members and asked them what their thoughts are and their relationship to the land that's within the Monument. They have told me that they have hunted and fished and they have ancestral ties to that land.

We do traditional medicine-plant gathering. We go down and collect sage and a lot of traditional medicines that we use. The ones that run the sweat lodges really like the Missouri River willows because they get good size and are the best construction material for building a sweat lodge.

Environmental Justice

Executive Order 12898, Environmental Justice, requires each federal agency to identify and address the "... disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations"

American Indians represent 17.2% of the population in the social study area. This population is concentrated in Blaine County whose population is nearly 50% American Indian. The median household income, for populations on the reservations discussed above, ranges from \$21,225 on the Fort Belknap Reservation to \$27,044 on the Crow Reservation (2000 census data). These figures compare to a statewide average of \$33,024.

In 1999, an average of 20.6% of the people living in the social study area had incomes below the poverty level. This compares to a State of Montana average of 14.6%. Figures for individual counties range from a low of 15.4% in Fergus County to a high of 28.1% in Blaine County.

Economic Conditions

The study area examined in this section comprises five counties in Montana: Blaine, Chouteau, Fergus, Hill, and Phillips. Although the focus of the analysis is the combined five-county area, supplemental data for each county is also provided. Four of the study area counties contain Monument land while the fifth, Hill County, is an integral part of the regional economy affected by activities in the Monument. In addition to the county-

level analysis, the economies of select cities and smaller communities, such as Big Sandy, Fort Benton, Winifred, Loma, Chinook, Lewistown, and Zortman are also briefly examined.

The five-county area was first described by Meriwether Lewis and William Clark as they passed through the region on their journey to and from the Pacific Ocean. The earliest economic market activity began when fur trappers entered the area, followed by trading posts and gold seekers. The Missouri River was an important transportation route during that period, with steamboats offering access to regional markets. The growth of mining activity provided a market for beef, and consequently, ranching began to flourish in the 1860s. During the 1880s, railroads were constructed in the area, and ranchers and miners obtained cheaper access to distant markets. The Enlarged Homestead Act was passed in 1909, resulting in the expansion of agriculture as farmers moved into the region to take advantage of the low-priced land. Wheat became an important export crop.

Population

Community characteristics, population characteristics, and population trends are discussed in the Social section of this chapter.

Employment

Employment can be viewed as a key economic indicator, as patterns of growth and decline in a region's employment are largely driven by economic cycles and local economic activity. The period of 1995 through 2004 was one of significant economic growth in the United States, with employment rising by over 14%. During the same period, Montana experienced faster economic growth than the nation as employment increased by almost 18%. All of the counties in the study area had employment growth below the national and state growth rates, with two counties (Blaine and Phillips) experiencing declines. The following section summarizes some notable changes in study area employment levels over the period 1995 to 2004.

Total employment in the five-county area grew just over 3% during the period of analysis, a decrease from the previous 10-year period (1985 to 1994) when growth was more than 6%. This increase in employment was not evenly distributed across the study area counties (Table 3.23). At the high end of the growth, Fergus County gained 631 jobs (9%), while at the low end, 146 jobs were lost in Phillips County (-5%).

Examining employment patterns by sector provides insight into which areas of the economy are expanding and which are shrinking. Due to the introduction of a new employment classification system in 2001, however,

it is not possible to accurately compare employment figures by sector before and after 2001.⁴ This section, therefore, presents a picture of recent changes in employment patterns from 2001 to 2004 and supplements this data with a brief overview of the shifts in employment patterns from 1991 to 2000.

Table 3.23
Change in Total Employment in Study Area
Counties, 1995 to 2004

<i>County</i>	<i>Change in Number of Jobs</i>	<i>% Change in Employment</i>
Blaine	-6	-0.20%
Chouteau	267	9.23%
Fergus	631	9.12%
Hill	69	0.70%
Phillips	-146	-5.05%
5-County Total	815	3.19%
Montana	89,768	17.71%
United States	21,108,700	14.17%

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System (REIS), Table CA04, <http://www.bea.gov/ bea/ regional/reis/>, accessed October 11, 2006.

Between 1991 and 2000 the fastest growing sectors in the study area were agricultural services and construction, with both growing by nearly 50%. Although employment in agriculture across the U.S. has been in long-term decline due to a steady improvement in labor productivity in the agricultural sector, agricultural employment in the study area during the 1990s did not follow this long-term trend. Farm and ranch employment increased in all counties except Blaine and Phillips for a total gain of 300 jobs (Table 3.24). While agriculture and construction had the largest relative employment increases, the sector with the largest increase in the number of employees was the services sector which added 1,490 jobs. Employment growth in the services sector accounted for 46% of all jobs added in the five-county region during the decade. Other sectors with significant job increases were retail trade

⁴ In 2001, the Bureau of Labor Statistics introduced the North American Industrial Classification System (NAICS), which replaced the Standard Industrial Classification (SIC). While there are bridges to convert SIC to NAICS, they are not completely accurate as additional employment categories were included in NAICS. To avoid this discrepancy, data from the two different classification systems are not compared in this analysis.

and the finance, insurance, and real estate sector. The largest job declines during this period were in mining (150 jobs lost) and the transportation and utilities sector (208 jobs lost). Government employment also declined slightly due to a loss of 169 military jobs.

Table 3.24 Change in Employment in the Five-County Area, 1991 to 2000		
<i>Sector</i>	<i>% Change</i>	<i>Jobs</i>
Total Employment	8.6%	2,069
Farm and Ranch	7.6%	300
Agricultural Services and Other	48.9%	259
Mining*	-44.9%	-150
Construction	47.9%	395
Manufacturing (including Forest Products)	6.6%	37
Transportation and Public Utilities	-13.3%	-208
Wholesale Trade	7.4%	62
Retail Trade	4.9%	203
Finance, Insurance, and Real Estate	28.1%	324
Services*	29.1%	1,490
Government	-0.2%	-10
Federal, Civilian	2.9%	17
Military	-40.3%	-169
State and Local	4.1%	142

* Estimated for some counties due to data disclosure issues in some years.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System (REIS), 1969-2000, CD-ROM, May 2002.

The employment pattern shifts in the period 2001 to 2004 (Table 3.25). While farm employment was the fastest growing sector during the 1990s, it actually declined slightly in all counties in the study area from 2001 to 2004 (though not as steeply as across the rest of Montana and the entire U.S.). Employment in the agricultural services sector, however, increased in all study area counties, adding a total of 109 jobs. Mining, which declined in the period 1991 to 2000, experienced the largest percentage growth from 2001 to 2004 with employment rising by 32% (44 jobs).

Services and construction sectors continued to add the most jobs to the local economy. The services sector

provided 239 new jobs (3.5%), while construction added 147 jobs (12.7%). This trend paralleled the national and Montana State trends of significant growth in these two sectors. Other recent growth sectors in the study area include real estate, rental and leasing (90 new jobs), government (68 new jobs), and transportation and warehousing (64 new jobs). Retail trade and manufacturing declined by approximately 50 jobs each, although both were growth sectors during the 1990s.

As the timeframe 2001 to 2004 is a relatively short time period and employment statistics tend to vary on an annual basis, trends in this data may not indicate a strong economic trend in the study area. However, the data at both the study area and county level does appear to reflect national trends of growth in service and construction sectors during the beginning years of this decade.

Table 3.26 presents the employment trends between 2001 and 2004 for the five individual counties in the study area. These figures in particular should be interpreted with caution (i.e., not necessarily indicating strong economic trends) due to the short time period of comparison and the smaller economic unit of analysis. Employment in Blaine County increased by 68 jobs, or just over 2% during the period. The largest absolute growth was in the agricultural services sector (71 new jobs), followed by the services sector (44 new jobs). Sectors with the largest declines in employment were retail trade (26 jobs lost), wholesale trade (21 jobs lost), and government (21 jobs lost).

Chouteau County experienced slight growth in employment, gaining only 23 jobs, or less than 1% increase. The services and real estate sectors had the largest employment gains with 39 and 22 additional jobs, respectively. Chouteau was the only county in the study area with a rise in manufacturing jobs; approximately 11 jobs were added in this sector between 2001 and 2004. The largest job losses during this period were experienced in the government sector (31 jobs lost), finance and insurance sector (19 jobs lost), retail trade sector (10 jobs lost), and farm employment sector (9 jobs lost).

Job growth in Fergus County from 2001 to 2004 was 2%, or 148 additional jobs. Similar to the general pattern in the study area, the two sectors adding the most jobs in the county were services (147 new jobs) and construction (84 new jobs). The government sector had the largest decline in jobs (48 jobs lost), followed by manufacturing (42 jobs lost). The retail trade and information sectors also experienced declines in employment, losing 33 and 11 jobs, respectively.

Hill County had the highest job growth of the five counties, with an increase of 386 jobs (over 4%). The largest percentage gains occurred in mining and utilities.

Hill County accounted for nearly all of the growth in the mining sector for the study area, adding 42 jobs between 2001 and 2004 (primarily in natural gas). Hill County was also the only county in the area with an increase in government employment, adding 182 jobs, or 30% of all job growth in expanding sectors. Further, it was the only county with a decline in services sector jobs, although the loss was less than 1% (9 jobs lost). Hill County was similar to the other counties, however, in experiencing job growth in transportation and warehousing (49 new jobs), real estate and leasing (41 new jobs), and construction (32 new jobs) sectors.

Employment in Phillips County rose by over 1% from 2001 to 2004 (32 new jobs). Construction and services accounted for the largest jobs gains in the county, with both sectors adding approximately 20 jobs. The construction sector also had the highest rate of growth at 20% (20 new jobs), followed by the wholesale trade sector at 15% (14 new jobs). The greatest job losses were in government (14 jobs lost) and manufacturing (10 jobs lost) sectors.

Personal Income

Personal income is the total amount of income received, and includes earnings, transfer payments, dividends, interest, and rent. It represents the total amount of income to an individual. Earnings represent the sum of three components of personal income: wage and salary disbursements, other labor income (includes employer contribution to pension and profit-sharing, health and life insurance, and other non-cash compensation), and proprietor's income. Earnings reflect the amount of income that is derived directly from work and work-related factors.

Personal transfer payments are payments for which no services are performed. Transfer payments are comprised of government transfer payments to individuals, such as retirement and disability insurance benefits, medical payments (mainly Medicare and Medicaid), income maintenance benefits (such as food stamps or family assistance), unemployment insurance benefits, veterans' benefits, and federal grants and loans to students. These also include payments by federal, state, and local governments to non-profit institutions and payments by businesses to individuals (such as liability payments for personal injury) and non-profit institutions (such as corporate gifts).

Dividends consist of payments in cash or other assets (excluding a corporation's own stock) made by corporations located in the U.S. or abroad to U.S. residents. Interest is the interest income (monetary and imputed) of individuals from all sources, while rental income is the net income of persons from the rental of real property.

Personal income increased by more than 43% in the U.S. between 1995 and 2004 before adjusting for inflation. Adjustments are made for inflation in order to reflect the actual spending power of income. After adjusting for inflation, U.S. personal income increased by almost 16% during this time period (Table 3.27). In Montana, personal income grew by almost 51% before inflation during the period. After adjusting for inflation, personal income for the state increased by close to 22%.

As illustrated in Table 3.27, after adjusting for inflation, personal income in the study area counties increased by almost 22%, which is equivalent to the increase in the state. Total personal income rose despite a decline of 32% in farm proprietor's income, a significant source of personal income for the area. Income from wages and salaries and from non-farm proprietor's income increased enough to offset the large reductions in farm income. However, increases in wage and salary income in the study area were much less than those for the state and the nation (10% compared to 27 to 28%). The same pattern holds of comparatively less growth of non-farm proprietor's income in the study area.

Despite relatively lower growth in labor and proprietor's income, personal income in the study area kept pace with income growth in the state because of higher growth in transfer payments (Table 3.27). Income from transfer payments in the five-county study area increased over 24% after adjusting for inflation, compared to 18% for the state. The income maintenance component of this category increased by over 26%, whereas it only increased by 13% for the state. In general, transfer payments comprised a larger portion of personal income in the study area than in the state. The proportion of all transfer payments to personal income in the five-county study area stayed relatively constant at approximately 20% from 1995 to 2004, while the corresponding figure for the state remained at approximately 16%.

Figure 3.13 illustrates personal income by source for the study area in 2004.

Figure 3.13
Distribution of Personal Income by Source
Five-County Area, 2004

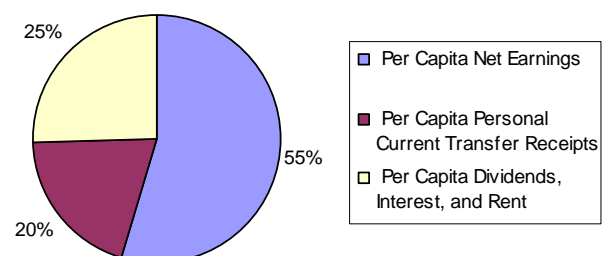


Table 3.25
Change in Employment in the Five-County Area, Montana, and the United States, 2001 to 2004

<i>Sector</i>	<i>5-County Area</i>		<i>Montana</i>		<i>United States</i>	
	<i>% Change</i>	<i>Jobs</i>	<i>% Change</i>	<i>Jobs</i>	<i>% Change</i>	<i>Jobs</i>
Total Employment	2.6%	657	5.4%	30,670	1.8%	3,076,800
Farm Employment	-0.7%	-30	-0.8%	-262	-2.8%	-87,000
Forestry, fishing, related activities, and other*	6.5%	109	-1.8%	-139	-4.2%	-43,200
Mining*	32.4%	44	17.3%	1,219	3.9%	31,600
Utilities*	12.7%	10	-8.4%	-275	-5.9%	-36,500
Construction*	12.7%	147	13.0%	4,992	3.5%	349,100
Manufacturing*	-8.7%	-54	-8.1%	-1,995	-12.5%	-2,118,500
Wholesale trade	3.6%	25	3.4%	594	-1.3%	-80,800
Retail trade	-1.8%	-50	3.4%	2,405	1.3%	243,100
Transportation and warehousing*	8.7%	64	-2.4%	-419	-2.1%	-113,400
Information*	-5.6%	-20	-1.4%	-135	-12.8%	-519,200
Finance and insurance	1.6%	14	8.5%	1,743	2.7%	214,300
Real estate and rental and leasing	13.6%	90	14.7%	2,778	13.3%	738,500
Services*	3.5%	239	8.7%	18,101	6.3%	4,012,800
Government and government enterprises	1.4%	68	2.3%	2,063	2.1%	486,000
Federal, civilian	5.0%	29	3.9%	503	0.1%	3,000
Military	-6.1%	-15	0.2%	20	-0.8%	-17,000
State and local	1.3%	54	2.2%	1,540	2.7%	500,000

* Estimated for some counties due to data disclosure issues in some years.

Note: The "Services" sector includes professional and technical services, management of companies and enterprises, administrative and waste services, educational services, health care and social assistance, arts, entertainment, and recreation, accommodation and food services, and other services (except public administration).

Source: Extrapolated from U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System (REIS), Tables CA25fn and CA25Nfn, <http://www.bea.gov/bea/regional/reis/>, accessed October 12, 2006.

Table 3.26
Change in Employment in Study Area Counties, 2001 to 2004

<i>Sector</i>	<i>Blaine</i>		<i>Chouteau</i>		<i>Fergus</i>		<i>Hill</i>		<i>Phillips</i>	
	<i>% Change</i>	<i>Jobs</i>	<i>% Change</i>	<i>Jobs</i>	<i>% Change</i>	<i>Jobs</i>	<i>% Change</i>	<i>Jobs</i>	<i>% Change</i>	<i>Jobs</i>
Total Employment	2.3%	68	0.7%	23	2.0%	148	4.1%	386	1.2%	32
Farm Employment	-0.9%	-6	-1.0%	-9	-0.6%	-6	-0.5%	-4	-0.8%	-5
Forestry, fishing, related activities, and other*	19.9%	71	6.5%	13	0.9%	7	16.5%	17	0.4%	1
Mining*	14.3%	1	20.0%	2	0.0%	0	40.4%	42	-12.5%	-1
Utilities*	20.0%	1	0.0%	0	0.0%	0	30.4%	7	10.5%	2
Construction*	21.6%	8	3.7%	3	15.6%	84	8.0%	32	20.2%	20
Manufacturing*	0.0%	0	21.2%	11	-10.0%	-42	-14.8%	-13	-18.9%	-10
Wholesale trade	-23.6%	-21	0.0%	0	8.2%	19	5.9%	13	15.4%	14
Retail trade	-8.9%	-26	-3.7%	-10	-4.1%	-33	1.3%	15	1.4%	4
Transportation and warehousing*	20.4%	11	12.8%	5	0.0%	0	9.8%	49	-1.1%	-1
Information*	20.0%	1	-37.5%	-3	-13.1%	-11	-1.3%	-3	-12.1%	-4
Finance and insurance	-22.4%	-13	-13.0%	-19	9.6%	22	5.0%	17	9.0%	7
Real estate and rental and leasing	78.3%	18	25.0%	22	3.2%	8	17.0%	41	1.7%	1
Services*	8.4%	44	5.7%	39	8.3%	147	-0.3%	-9	3.2%	18
Government and government enterprises	-2.5%	-21	-5.6%	-31	-4.3%	-48	8.9%	182	-3.1%	-14
Federal, civilian	0.0%	0	-2.5%	-1	-0.6%	-1	21.3%	26	7.9%	5
Military	-5.6%	-2	-9.7%	-3	-4.8%	-3	-4.3%	-4	-12.5%	-3
State and local	-3.1%	-19	-5.6%	-27	-4.9%	-44	8.8%	160	-4.3%	-16

* Estimated for some counties dues to data disclosure issues in some years.

Note: The "Services" sector includes professional and technical services, management of companies and enterprises, administrative and waste services, educational services, health care and social assistance, arts, entertainment, and recreation, accommodation and food services, and other services (except public administration).

Source: Extrapolated from U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System (REIS), Tables CA25fn and CA25Nfn, <http://www.bea.gov/bea/regional/reis/>, accessed October 12, 2006.

Table 3.28 presents the comparative analysis of personal income components for the five counties individually. Chouteau County had the smallest increase in inflation-adjusted per capita income of the five counties, while Phillips County had the largest increase, despite a severe drop in farm proprietor's income. Farm proprietor's income decreased in three of the five counties, while Fergus and Blaine Counties experienced increases in this component. Fergus County also had higher growth in non-farm proprietor's income relative to Montana and the U.S. Transfer payments in each of the five counties increased at higher rates than both the state and nation, with those in Phillips County increasing by over 42% during the period of analysis.

Major Economic Sectors

The previous section focused on changes in the study area economy in the past decade by examining rates of change in employment and income. This part addresses questions regarding the size and structure of the state and study area economies, such as: What is the economy of Montana like? What are the sectors with the largest output? Which sectors employ the most people? Which ones have the largest payments of wages and salaries and proprietary income? Understanding the responses to these questions will provide some perspective on the differences between the state as a whole and the study area.

State of Montana

Historically, Montana has been known for its mining and agriculture. Over time, the state's economy has evolved into a modern and diversified economy. Table 3.29 presents the output, employment, income, and income per job for the state during 2003 by the industrial division under the North American Industrial Classification System (NAICS). Based on this data, the leading sector in terms of output in Montana is the services sector (24%), followed by the construction sector (16%) and the manufacturing sector (12%). The services sector also provides the most jobs and personal income (40% of jobs and 30% of income), followed by the government sector (15% of jobs and 23% of income). The highest paying jobs are in the utilities sector, followed by mining, while income per job in agriculture, forestry, fishing, and hunting is the lowest.

In order to present a clearer illustration of the economy, this analysis examines the economic data in a more disaggregated form. Each economic sector, or NAICS division, shown in Table 3.29 is comprised of individual industries. The industries in the state economy were ranked by the size of their industrial output, employment, and income to help answer the questions regarding the size and structure of the Montana and study area economies.

The real estate industry has the highest output in Montana, while petroleum refining, a manufacturing industry, has the second largest output in the state. This industry requires a large capital investment in plant and equipment, such that a significant portion of the value of output is paid to capital. Petroleum refining is not included in the top-ranked industries in terms of either employment or income. Also, no other manufacturing industries are included in this or any other rankings. Other top-ranked industries in terms of output are owner-occupied dwellings, which rank third in output, closely followed by state and local education, hospitals, and food services and drinking places.

Government and services provide the most jobs for the Montana economy. Three government industries (state and local education, state and local government non-education, and federal government non-military) are included in the top 10 industries when ranked by number of jobs, with state and local education employment providing the most jobs of any industry in the state. All government industries combined, including the three government industries cited above plus federal government military, provide 15% of all Montana jobs. Additionally, several service industries rank in the top five employment providers in the state. Food and drinking establishments rank second, while religious organizations rank third, and hospitals rank fifth.

Government and services are among the most important providers of income in Montana. Three of the four government industries rank in the top five income producers, with the fourth government industry ranking ninth. Health-related service industries are also important income providers, with hospitals ranking third and physician or dentist offices ranking fifth. Other industries providing more than \$500 million in income are real estate and wholesale trade that rank sixth and seventh.

Study Area

As with the state, the five-county study area has historically been identified with the agricultural and mining industries. However, based on the size of output in 2003 (Table 3.30), the services sector is the most important sector with 21% of output. Agriculture is still an important sector, accounting for 18% of output. Mining, however, has declined and is now one of the smallest sectors by this measure. The government division is now third in terms of output (at 17%, just slightly smaller than the agricultural sector), followed by transportation and warehousing and retail trade.

In terms of jobs, the largest sector is again services, which comprises one-third of all study area employment. The agriculture, forestry, fishing, and hunting sector ranks second in terms of employment (20% of jobs), followed by the government sector (18% of jobs). Other

sectors with high employment are construction and retail trade.

The economic contribution of the sectors differs, however, when ranked by income. While the service sector is the top ranking sector in terms of both output and jobs, it falls to second place when ranked by income. Government provides the most income, followed by services and retail trade. The highest average paying jobs are found in the utilities sector, with mining a close second. Agriculture has the lowest average income earned per job in the five-county study area.

A more detailed analysis of economic data by individual industry for the study area (Tables 3.31, 3.32, 3.33) indicates that the two principal agricultural industries, grain farming and cattle ranching, are very important in terms of output and employment (ranked 1 and 2, respectively in terms of output and 1 and 6, respectively in terms of employment), but much less important in terms of income (ranked 24 and 21 respectively). Similar to the state as a whole, the various levels of government provide important economic contributions to the study area, with three of the four government industries (all except the military) ranking in the top fifteen industries for output, employment, and income. Three other important industries are hospitals, wholesale trade, and food services and drinking places, which all rank in the top ten for each of the three economic measures. The economic data for individual counties in the study area is located in Appendix W.

For Hill and Phillips Counties, oil and gas extraction is also an important industry in terms of output, and is ranked eighth in terms of income for Phillips County. In Hill County, the railroad industry is a primary part of the economic base, providing the most output and income and ranking seventh in jobs.

Reflecting the small size of the manufacturing sector, no individual manufacturing industries appear in any of the top rankings, apart from soft drink and ice manufacturing in Fergus County which ranks seventh in industry output but much lower in income and employment. Most of the local manufacturing serves local markets. The prepared feeds and meat packing industries serve the ranching industry; newspapers and commercial printing serve households and small businesses; and sheet metal work serves a variety of local businesses.

Travel and tourism is also a major industry in the study area that is not included in the SIC or NAICS classification systems. Travel and tourism is commonly referred to as an "industry," but it is not defined as such in economic statistics. Rather, travel and tourism spending is distributed across many other industries, primarily in the services sector. Measuring the economic importance of tourism, therefore, requires using indirect methods. Typically, this is done by identifying the

patterns of expenditures by travelers and tourists, estimating how many visited an area, and multiplying the expenditure patterns by the number of visits to get an estimate of the direct effect on industries where the expenditures are made.

This method was used by the University of Montana's Institute for Tourism and Recreation Research (ITRR) to estimate the economic importance of non-resident travel in Montana. Their study estimated that 10.1 million non-residents visited Montana in 2005, a figure roughly 10 times the state's residential population.⁵ Furthermore, ITRR estimates that non-resident travel in Montana contributes 12% of labor income in the state within the basic industries, and represents the fourth largest industry following federal civilian workers (23%), transportation (16%), and selected manufacturing (13%).⁶ For non-resident visitors to Blaine, Hill, Chouteau, and Fergus Counties, an area commonly referred to as Russell Country, roughly 80% of their expenditure in Montana is for gas, restaurants, retail, and hotels (Table 3.34).⁷ According to ITRR's analyses, about 7.5% of total employment in Montana is directly and indirectly related to non-resident travel and tourism.⁸ For the five-county area, 7.5% of total employment would represent about 1,983 jobs. As this figure only includes non-resident tourism, total tourism in the study area may account for a larger proportion of jobs.

Outdoor activities comprise a large portion of the study area's tourism economy with hunting, fishing, and boating the Missouri River being the most common outdoor pursuits. Annual tourism expenditures related to these outdoor opportunities are estimated below to indicate their relative importance to the local economy. To estimate these expenditures, BLM boater registration data and MFWP hunting and angling data were combined with expenditure data from the ITRR and MFWP.

Based on the available data, hunting appears to be the largest economic contributor among outdoor tourism activities in the study area. According to 2005 MFWP data⁹, hunting for elk, deer, black bear, pronghorn

⁵ Norma Nickerson and Chrissy Oschell, Institute for Tourism and Recreation Research, University of Montana, September 2006, 2001/2005 Nonresident Comparison: Visitor Profile.

⁶ Norma Nickerson, Institute for Tourism and Recreation Research, University of Montana, 2005 State of Travel Industry in Montana.

⁷ Institute for Tourism and Recreation Research, University of Montana, March 2004, Niche News: Russell Country Travel Region Visitor Characteristics.

⁸ Institute for Tourism and Recreation Research, University of Montana, March 2004, Niche News: Russell Country; Institute for Tourism and Recreation Research, University of Montana, December 2006, The Economic Review of the Travel Industry in Montana: 2006 Biennial Edition.

⁹2005 MFWP harvest reports accessed at: <http://fwp.mt.gov/hunting/planahunt/harvestreports.html>.

antelope, big horn sheep, and upland birds resulted in 148,418 Montana resident hunter days and 40,418 non-resident hunter days in the study area.¹⁰ Multiplying these hunting use estimates by MFWP average daily expenditure data¹¹ specific to target species and residency indicates that hunting expenditures in the study area total approximately \$18.8 million, of which \$10.4 million are non-resident expenditures and \$8.4 million are resident expenditures. These figures may be slightly inflated as some portion of average daily expenditure may be spent outside of the study area, and some of the resident hunter days are likely by study area residents who should not be included as tourists.

Boating the Missouri River through the Monument is another area attraction. According to BLM boater registration data collected May through September, there are approximately 6,000 people boating the river each summer, of which 1,700 are with a commercial guide. Conversations with local outfitters as well as ITRR nonresident expenditure profiles indicate that the average guided trip costs approximately \$800 per person while an unguided trip costs approximately \$390 per person. When coupled with the BLM boater registration data, these estimates imply over \$3 million in expenditures in the study area related to boating the Missouri River.

Regarding angling, with the exception of the Missouri River the study area provides very few 'destination' class angling opportunities.¹² Data from MFWP provide estimates of the number of summer and annual angler days by residents and non-residents on the Missouri River as well as on local streams.¹³ MFWP also estimates the average daily expenditures for resident and

non-resident anglers.¹⁴ To estimate total tourism expenditures associated with angling, several assumptions were made. First, it is assumed that angling on local streams is primarily done by study area residents, so such use estimates are excluded from the expenditure analysis. Also, as the BLM boater registration figures for the Missouri River account for anglers as well, expenditures associated with angling on the Missouri River during the summer are excluded from the analysis to prevent double counting. The remaining 6,870 Missouri River anglers are all Montana residents and spend an estimated \$630,000 in the study area. As some resident anglers are from within the study area (and therefore do not represent additional area spending), this angling tourism expenditure figure may be biased upwards.

Overall, the estimated expenditures on hunting, boating, and angling total \$22.4 million. Including a multiplier effect that indicates the total effect of these expenditures rippling through the local economy, these three outdoor tourism attractions are estimated to account for approximately 1% to 2% of local economic output and 2% to 3% of local jobs. These three activities, however, do not represent all of the tourism in the study area as wildlife viewing, historical tourism, and pass-through tourism are all contributors.

Output Multipliers

Output multipliers measure the round-by-round effects of money coming into the study area. For example, when the ranching sector is marketing cattle and the cattle are exported from the study area, the money from this sale enters the area's economy. This is called the direct effect of selling cattle for export. The ranching sector also buys goods and services from other sectors within the local economy. This is called the indirect effect of the export. That is, these sectors, while not directly exporting cattle, are supplying the ranching sector with goods and services. Through these direct and indirect effects of the export, households receive income from wages, salaries, proprietary income, interest, rents, etc. Some of this household income is spent within the study area. This is called the induced effect of the export.

A multiplier is calculated by adding the direct, indirect, and induced effects together and dividing the sum by the direct effect. Multipliers are typically numbers like 1.5. This number is interpreted as the sum of the direct effect being the 1 and the indirect and induced effects being the 0.5. This means that for every dollar of export from the sector, the multiplier produces an additional output in the

¹⁰ This figure includes all hunting estimates in MFWP hunting districts 405, 411, 412, 417, 420, 426, 447, 471, 473, 480, 482, 600, 610, 611, 620, 621, 622, 680, and 690 as well as upland game bird hunting areas in each of the five counties. For districts extending past study area boundaries, expenditure estimates were multiplied by the percentage of the district acreage within the study area.

¹¹ Expenditure estimates provided by Rob Brooks, MFWP. Estimates include gas, food, lodging, guide fees, transportation fare, and miscellaneous trip expenses but do not include durable goods or license fees. Estimates were based on the following studies (updated to 2005 dollars): The Net Economic Value of Elk Hunting in Montana, 1988; The Net Economic Value of Deer Hunting in Montana, 1988; The Net Economic Value of Antelope Hunting in Montana, 1988; A Contingent Valuation Assessment of Upland Game Bird Hunting - Hunter Attitudes and Economic Benefits, 1992; A Contingent Valuation Assessment of Black Bear Hunting, Hunter Attitudes and Economic Benefits, 1993; A Contingent Valuation Assessment of Moose, Bighorn Sheep and Mountain Goat Hunting - Hunter Attitudes and Economic Benefits, 1996.

¹² Personal communication with Gail Fisher, Russell Country Tourism, April, 4, 2007.

¹³ MFWP, 2005, Montana Statewide Angling Pressure, <http://fwp.mt.gov/fishing/management/default.html>.

¹⁴ Provided by Rob Brooks, MFWP. Estimates include gas, food, lodging, guide fees, transportation fare and miscellaneous trip expenses but do not include durable goods or license fees. Estimates updated to 2005 dollars with the CPI: The Net Economic Value of Fishing in Montana, 1987.

total economy of the study area equal to 50 cents. Table 3.35 presents output multipliers for selected sectors in the study area economy.

The sectors displayed in Table 3.35 are selected to represent the sectors most related to Monument outputs and uses. Ranching and farming and oil and gas production are the primary sectors associated with the Monument that produce products for export. Sectors affected by the recreation and tourism associated with the Monument are food and beverage stores, gasoline stations, general merchandise stores, amusement gambling, and recreation (i.e. recreational services), hotels and motels, and food services and drinking places. Federal government - non-military is the sector where the BLM purchases of goods and services and BLM payroll occurs, and reflects money coming in from outside the study area that has a multiplier effect.

Unemployment

In 2004, the unemployment rate for the U.S. was 5.5% and that for Montana was 4.3%. The rate for the study area fell between these two rates at 4.4% (Table 3.36). Fergus County had the highest unemployment rate amongst the five counties analyzed (4.9%), while Chouteau County had the lowest rate (3.3%).

Local Communities

This section portrays the economies of several communities located near the Monument. These are Chinook in Blaine County; Big Sandy, Fort Benton, and Loma in Chouteau County; Lewistown and Winifred in Fergus County; and Zortman in Phillips County. Table 3.37 presents a summary of selected socioeconomic indicators for these communities.¹⁵

Chinook

The City of Chinook is located in western Blaine County near the Milk River, and is also the county seat. According to the 2000 Population and Housing Census, the city had a population of 1,386 with 732 housing units during that year (Table 3.37). The per capita income of Chinook residents was \$16,038 in 1999, a little higher than the per capita income of \$15,303 in Blaine County.¹⁶

A total of 602 people were employed in the city in 2000 (Table 3.37). Table 3.38 presents the top ten industries in Chinook by employment. Almost 24% of the city's

workforce is employed in the educational, health, and social services sector, making it the largest industry in terms of employment. This is followed by retail trade and construction, employing over 16% and 10% of Chinook residents, respectively.

Big Sandy

Located in northeastern Chouteau County near the Bears Paw Mountains, Big Sandy is one of the "storied towns of the Old West." As presented in Table 3.37, the town had a population of 703 in 2000 and 371 housing units. The per capita income in the small community of Big Sandy was \$14,801 in 1999, compared with \$21,049 in Chouteau County.¹⁷

Historically, the town was a ranching community and freighting center for goods unloaded just south on the Missouri River. However, when the homesteaders left in financial stress around 1919, the homestead acreages were absorbed by big farm units, making Big Sandy primarily a farming community. The total employment in the community was 304 in 2000 (Table 3.37). As presented in Table 3.39, agriculture, forestry, fishing, hunting, and mining now comprise the second largest industry in the town, employing more than 15% of its workforce. The largest sector in terms of employment is education, health, and social services, absorbing more than 33% of Big Sandy's workforce. Another 10% of the town's working residents are employed in the arts, entertainment, recreation, accommodation, and food services industry.

Fort Benton

Fort Benton, known as the birthplace of Montana, was established in the mid-nineteenth century on the banks of the Missouri River. The city remained an important trading post and hub for travel throughout the northwestern United States and Canada until the arrival of the railroad in this area. According to the 2000 Population and Housing Census, the community had a population of 1,594 and 731 housing units during that year (Table 3.37). The per capita income in Fort Benton was \$14,861 in 1999, lower than Chouteau County's per capita income of \$21,049.¹⁸

Table 3.40 presents the top ten industries in Fort Benton by employment. Based on 2000 data, of the 665 persons employed in the city, almost 24% work in the educational, health, and social services industry, while

¹⁵ Information on Zortman is not included, since reliable socioeconomic data on the community is not available.

¹⁶ Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System (REIS), Table CA1-3, <http://www.bea.gov/bea/regional/reis/>, accessed October 30, 2006.

¹⁷ Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System (REIS), Table CA1-3, <http://www.bea.gov/bea/regional/reis/>, accessed October 30, 2006.

¹⁸ Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System (REIS), Table CA1-3, <http://www.bea.gov/bea/regional/reis/>, accessed October 30, 2006.

another 15% are associated with retail trade. Agriculture, forestry, fishing, hunting, and mining employ almost 11% of the city's workforce, representing the third largest sector.

Loma

Loma is a small community located on the banks of the Missouri River in Chouteau County with a population of 92 in 2000 residing in 47 housing units (Table 3.37). The per capita income in Loma was \$12,885 in 1999, significantly lower than that in Chouteau County (\$21,049).

As illustrated in Table 3.41, manufacturing represents the largest industry in the community, employing seven of the reported 33 persons in the workforce in 2000. The second largest sector is educational, health, and social services, with six people employed. This is followed by the arts, entertainment, recreation, accommodation, and food services industry with five employees.

Lewistown

Located in Fergus County, Lewistown was established as a small trading post and later also became an agricultural community. Presently, the city is still a major trading center and also has many large cattle ranches and wheat farms in the area. In 2000, the population of Lewistown was 5,813, with 2,868 housing units (Table 3.37). The per capita income in the city was \$16,817 in 1999.

As presented in Table 3.42, based on 2000 data, more than 24% of the city's 2,676 person workforce is employed in the educational, health, and social services sector. This is followed by retail trade with almost 15% of total employment and arts, entertainment, recreation, accommodation, and food services absorbing another 10%.

Winifred

Winifred is a small town of 156 people and 85 housing units (Table 3.37) in Fergus County that originated through the establishment of a railroad station. Like much of the area around the Monument, the town is historically tied to farming and ranching, and there are still many farms and ranches in the area. The per capita income was \$12,600 in 2000.

Educational, health, and social services is the largest industry in Winifred in terms of employment, providing jobs to almost 26% of the 85 people employed (Table 3.43). The second and third biggest sectors are agriculture, forestry, fishing, hunting, and mining; and arts, entertainment, recreation, accommodation, and food services, absorbing 21% and 20% of the town's labor force, respectively.

Zortman

Zortman is a very small community located in western Phillips County. According to the U.S. Census Zip Codes Business Pattern data for 2004, Zortman had three businesses in 2004, a retail trade establishment, an accommodation and food services establishment, and one business in the 'other' sector. All of these were reported to employ one to four people.

Public Revenue

State Revenue

Most states in the U.S. employ a three-part revenue structure that consists of income, property, and sales taxes. Montana, however, generates public revenue through four tax categories – income, property, natural resource, and "other" selective sales taxes. While Montana does not impose a comprehensive sales tax, the state does tax the production and sales of natural resources (i.e. the Oil and Natural Gas Production Tax) and the sales of select goods and services (i.e. the Cigarette and Other Tobacco Products Tax). In 2005, the State of Montana collected approximately \$1.31 billion in tax revenue, of which \$810 million (62%) were generated from individual income taxes, \$190 million (14%) from "other" selected taxes, \$188 million (14%) from state assessed property tax, and \$122 million (9%) from the natural resource tax.¹⁹

County Revenue

In addition to tax revenues, Montana's county governments receive funds from intergovernmental transfers, licenses and permits, fines and forfeitures, service charges, and returns on public investments. Counties in the state also generally impose taxes on gasoline, vehicles, and property. The gasoline tax, however, is not applied by all Montana counties, so the majority of county tax revenue is derived from property taxes and vehicle fees.²⁰ A property tax levy is determined by each county either through local government or popular vote, and is expressed as a *per mille* figure, or tax dollars per thousand dollars of property value. Table 3.44 below provides the county-assessed property tax as well as total county revenues for each county for fiscal year 2004 to 2005. In addition to property taxes assessed by the county, property tax mill levies are assessed for the State, school districts, fire districts, and other entities. Total property taxes assessed in 2005 in the study area are presented in Table 3.45.

¹⁹ Montana Department of Revenue, Biennial Report 2004-2005.

²⁰ Personal communication with Dan Dots, Tax Policy and Research Office of the Montana Department of Revenue, December 29, 2006.

School District Funding

Montana school districts are funded through five sources: state aid, local property taxes, county distribution for retirement and transportation, non-levy revenue, and federal monies. In the 2003-2004 school year, 40% of school funding in the state was supplied by state aid, 45% was provided by local and county sources, and 15% was provided by federal sources.²¹ Table 3.46 provides detailed school funding information for each of the five counties in the study area. Total school spending in the study area was just under \$84.2 million in the 2004 to 2005 school year, with roughly 39% of funding from local and county sources, 37% from state sources, and 24% from federal sources.

Relationship of BLM Activities to the Study Area Economy and Tax Revenues

The economy of the five-county study area has many links to outputs and uses related to the Monument. Ranching is an important segment of the area's economy, and the Monument land is utilized for cattle grazing. The Monument is currently a source of natural gas production, with the potential for expansion. Recreation activities, particularly on the wild and scenic sections of the Missouri River, are important sources of revenue for local businesses. Hunting and fishing in the Monument are also important to the local economy. Additionally, the BLM road system in the Monument provides connectivity to other transportation corridors in the area.

As discussed above, one of the primary economic bases in the five-county area is ranching. The production of cattle in the region typically involves utilization of both private and public resources. Cattle grazing on public range is an important component of the ranching industry. The forage needs of the industry are met with a balance of public grazing lands, private grazing, and hay production, supplemented with grain. Current production reflects the current balance among these sources of supply. Changes in the availability of any of the components of nutrient requirements would require adjustments in the other components. If the supply of nutrients from the other components is relatively fixed, either economically or physically, then adjustments in herd size and production will occur.

Tourism is a growing source of revenue for local businesses situated near recreation areas attractive to visitors. The Monument is one such attraction. Tourists come to the Monument to pursue such diverse recreational activities as camping, hiking, big game hunting, upland bird hunting, angling, sightseeing, and

floating or motoring the wild and scenic segments of the Missouri River. Recreation related to these activities currently supports significant local business income as tourists often spend money at local hotels, restaurants, grocery stores, gas stations, and other retail and service establishments.

Additionally, Monument tourism helps to support local and regional outfitting services for both river-based recreation and upland recreation and hunting. In 2006 BLM issued a total of 36 Special Recreation Permits (SRPs) for commercial river trips, upland big game hunting, upland tours and vending services (Table 3.47). Nineteen of the businesses receiving an SRP are headquartered in the study area, 28 are headquartered in the state, and four are out-of-state-businesses.

Based on information provided by local Missouri River canoe guide and outfitter businesses, the typical river trip travels about 50 river miles over a three- to four-day period and with a standard group size of six people. The cost per person for the experience is between \$625 and \$725 for a total expenditure of \$3,750 to \$4,350 per trip.

Upland hunting trips in the region typically consist of a group of two to four hunters over a five-day period pursuing deer or elk. Aspects such as type of game, whether it is bow or rifle hunting, and size of group determine price, but it is estimated that the typical hunter will pay \$2,500-\$3,000 per trip or \$500-\$600 per day. Most upland outfitters host groups throughout the hunting season (September through December) and guide six to eight trips annually.

Federal lands also generate tax revenues for state and local governments. The following section summarizes the types of taxes accruing to state and local governments from federal lands, such as the Monument.

Payments in Lieu of Taxes (PILT)

Public lands held by the federal government are not included in the property tax base for the counties. As a result, counties forego tax revenue that they would have received if the land were privately owned. To reimburse the counties for these monies, the U.S. Congress passed Public Law 94-565 in 1976 that allows compensation for foregone property tax revenues to each county. This compensation, Payments in Lieu of Taxes (PILT), is the payment made by the federal government every fiscal year to each county in order to offset lost property tax revenues (BLM 2003c). Recent payments made to the five counties in the study are presented in Table 3.48. The amounts shown in the table are those appropriated by Congress and paid by the federal government each fiscal year. The amounts actually appropriated by Congress are usually less the amounts indicated by the PILT payment formulas.

²¹ Montana Office of Public Instruction, August 2005, "Facts About Montana Education," <http://opi.mt.gov/>, accessed in January 2007.

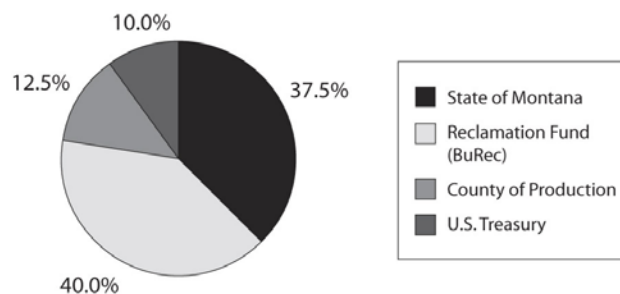
The PILT payment per acre can vary between counties and between years in the same county for a number of reasons. The PILT Act provides two formulas for allocating PILT money to counties. The administrator uses both formulas to calculate the amount for each county, and the county receives a PILT payment based on the formula producing the higher amount. The number of acres of qualified federal lands is defined as the entitlement lands and can change from year to year due to land exchanges and purchases. Prior fiscal year funds that may be deducted from the PILT payment may cause variation. These include federal payments to local governments under programs other than PILT during the previous fiscal year such as the Refuge Revenue Sharing Fund, the National Forest Fund, the Taylor Grazing Act, the Mineral Leasing Act for acquired lands, and the Federal Power Act. The governor of each state must report the amount of these payments each year to BLM, so that they may be deducted from the PILT payment. For the study area, the money received from the federal government represented about 2% of the revenue obtained from property taxes in 2005.

Federal Mineral Revenue Disbursements

In addition to PILT payments, the federal government makes payments from receipts for mineral leases and development. Mineral revenues are collected from two types of lands administered by the BLM, public domain lands and Bankhead-Jones lands, but all mineral revenues collected from within the Monument area are from public domain lands.

Mineral revenues on public domain lands are distributed as follows: the state receives 50%; the Reclamation Fund (managed by the U.S. Bureau of Reclamation) receives 40%; and the remaining 10% goes to the General Fund in the U.S. Department of the Treasury (Figure 3.14). Starting in Fiscal Year (FY) 2005, 25% of the disbursement to the State of Montana (or 12.5% of total royalty revenue) is distributed to the county of production (Figure 3.14).

Figure 3.14
Distribution of Federal Mineral Revenues
from Public Domain Lands



While production of natural gas from the Monument is currently not a large component of the area economy, production does currently exist and there is potential for new production. Market conditions for natural gas are an important factor in production and exploration decisions by producers. The cost of production of natural gas does not involve intensive local labor inputs. Additionally, the output gas is sold primarily outside the study area and the revenues from gas production are paid largely to firms outside the area. However, royalties and tax revenues are a source of income for all levels of government. Table 3.49 shows for the years 2004 to 2006 the royalty value paid to the federal government, the amount of royalty disbursed to the State of Montana and the amount of royalty distributed from the State of Montana to the county of production.

Gas Tax Roads

“Gas tax roads” are a subset of county rural roads, and can be public, BLM, or county roads with unrestricted access that receive a portion of the county fuel tax revenues. If the number of miles of gas tax roads increases/decreases, the tax revenue will increase/decrease proportionately. Since access to BLM portions of gas tax roads has the potential to change with different management options considered in plan development, the miles of gas tax roads in a county could change between plan alternatives. Table 3.50 shows the amount of money allotted for gas tax roads by county for FY 2005 for each of the study area counties.

Grazing Fee Receipts

The Taylor Grazing Act of 1934 contains provisions that permit the collection of fees for grazing livestock on federal lands. In Montana, grazing revenues are allocated as follows: 50% to county general fund and 50% directly to the state general fund (for use in local schools). Table 3.51 presents the fiscal year 2006 distribution of grazing revenues by county for the five counties in the study area.

Special Recreation Permit Fees

BLM issues Special Recreation Permits for activities, events, and groups. These include commercial uses, competitions, organized group activities, or social gatherings of reunions, religious groups, Boy/Girl Scout camps, etc.

In May 2000, the BLM Lewistown Field Office issued a moratorium on new annual Special Recreation Permits for commercially guided recreation trips on all BLM lands and waters within the Upper Missouri National Wild and Scenic River corridor.

Federal Government Expenditures

As discussed above, the federal government's non-military sector of the economy is an important source of jobs and household income in the five counties of the

study area. BLM employment is included in this sector. Changes in the management of the Monument that affect budgets may affect employment and income in this sector.

Table 3.27 Changes in Personal Income and Major Components of Personal Income in the Five-County Area, Montana, and the United States, 1995 to 2004			
<i>Personal Income Component</i>	<i>Percent Change (after adjusting for inflation)</i>		
	<i>5-County Area</i>	<i>Montana</i>	<i>United States</i>
Per Capita Personal Income	21.82%	21.60%	15.55%
Wage and Salary Disbursements	9.70%	27.98%	27.18%
Proprietor's Income	-2.65%	51.04%	46.30%
Non-Farm Proprietor's Income	30.94%	55.16%	46.73%
Farm Proprietor's Income	-31.89%	18.96%	37.96%
Per Capita Current Transfer Receipts	24.46%	18.00%	19.07%
Per Capita Income Maintenance	26.32%	13.07%	3.15%
Per Capita Unemployment Insurance Benefits	-10.35%	-6.58%	23.97%
Per Capita Retirement and Other*	25.30%	19.15%	21.04%
Per Capita Dividends, Interest, and Rent	27.46%	9.17%	-1.65%

* This component primarily comprises retirement and disability insurance benefit payments, medical payments (mainly Medicare and Medicaid), and veterans' benefits.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System (REIS), Table CA30, <http://www.bea.gov/bea/regional/reis/>, accessed October 12, 2006.

Table 3.28 Changes in Personal Income and Major Components of Personal Income in Study Area Counties, 1995 to 2004					
<i>Personal Income Component</i>	<i>Percent Change (after adjusting for inflation)</i>				
	<i>Blaine</i>	<i>Chouteau</i>	<i>Fergus</i>	<i>Hill</i>	<i>Phillips</i>
Per Capita Personal Income	24.04%	2.74%	27.54%	23.20%	27.97%
Wage and Salary Disbursements	20.21%	5.04%	18.67%	11.20%	-20.91%
Proprietor's Income	30.43%	-28.06%	82.02%	-27.23%	38.39%
Non-Farm Proprietor's Income	29.99%	30.69%	66.85%	5.43%	10.94%
Farm Proprietor's Income	31.65%	-39.08%	237.54%	-47.16%	-87.82%
Per Capita Current Transfer Receipts	27.61%	19.03%	20.24%	23.95%	42.18%
Per Capita Income Maintenance	10.77%	31.24%	29.88%	31.04%	28.83%
Per Capita Unemployment Insurance Benefits	-34.13%	21.75%	2.25%	-14.17%	-7.80%
Per Capita Retirement and Other*	33.49%	18.39%	20.17%	24.30%	44.68%
Per Capita Dividends, Interest, and Rent	21.18%	-4.42%	7.52%	59.10%	45.01%

* This component primarily comprises retirement and disability insurance benefit payments, medical payments (mainly Medicare and Medicaid), and veterans' benefits.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System (REIS), Table CA30, <http://www.bea.gov/bea/regional/reis/>, accessed October 12, 2006.

Table 3.29
Industry Output, Employment, Income, and Income per Job, by NAICS Division,
Montana, 2003 (in 2005 dollars)

<i>NAICS Division</i>	<i>Montana</i>			
	<i>Output (Mill. \$)</i>	<i>Employment (Jobs)</i>	<i>Income (Mill. \$)</i>	<i>Income/ Job (\$)</i>
Agriculture, Forestry, Fishing, and Hunting	3,004.0	41,517	394.3	9,498
Mining	1,678.0	6,218	482.5	77,591
Utilities	1,343.8	2,650	272.7	102,919
Construction	4,574.4	45,443	1,542.4	33,942
Manufacturing	8,699.9	22,173	1,063.5	47,964
Wholesale Trade	1,664.7	16,615	709.3	42,687
Transportation and Warehousing	2,130.4	18,862	814.9	43,200
Retail Trade	3,473.9	69,741	1,645.0	23,588
Information	1,776.4	8,516	380.7	44,704
Finance and Insurance	2,760.0	21,237	805.5	37,931
Real Estate and Rental	4,174.3	20,470	656.5	32,073
Services	13,116.7	241,533	5,623.6	23,283
Professional, Scientific, and Tech. Services	2,400.2	29,692	1,093.9	36,843
Management of Companies	172.3	1,429	65.0	45,461
Administrative and Waste Services	1,020.8	21,849	417.8	19,124
Educational Services	200.3	5,960	92.9	15,584
Health and Social Services	4,143.3	58,702	2,127.2	36,236
Arts, Entertainment, and Recreation	725.4	16,978	241.9	14,247
Accommodation and Food Services	2,156.1	49,192	663.7	13,491
Other Services	2,298.3	57,732	921.3	15,958
Government and Non NAICs	6,948.5	91,907	4,263.2	46,386
Totals	55,345.0	606,884	18,654.2	30,738

Source: 2003 IMPLAN data from Minnesota IMPLAN Group, Inc.

Table 3.30 Industry Output, Employment, Income, and Income per Job, by NAICS Division, Five-County Area, Montana, 2003 (in 2005 dollars)				
<i>NAICS Division</i>	<i>5-County Area</i>			
	<i>Output (Mill. \$)</i>	<i>Employment (Jobs)</i>	<i>Income (Mill. \$)</i>	<i>Income/ Job (\$)</i>
Agriculture, Forestry, Fishing, and Hunting	338.5	5,454	36.1	6,623
Mining	46.0	155	11.8	76,348
Utilities	47.6	96	10.0	104,179
Construction	131.7	1,329	43.7	32,899
Manufacturing	103.9	495	14.1	28,532
Wholesale Trade	56.1	741	23.9	32,245
Transportation and Warehousing	141.7	780	48.9	62,706
Retail Trade	119.6	2,317	56.7	24,457
Information	44.1	246	11.0	44,687
Finance and Insurance	73.8	638	20.2	31,689
Real Estate and Rental	91.3	556	16.1	28,962
Services	402.3	8,851.0	157.1	18,838
Professional, Scientific, and Technical Services	42.8	654	19.0	29,082
Management of Companies	0.3	3	0.1	25,067
Administrative and Waste Services	16.0	400	5.5	13,779
Educational Services	5.5	230	3.2	13,762
Health and Social Services	138.2	2,535	64.2	25,344
Arts, Entertainment, and Recreation	15.6	359	5.1	14,305
Accommodation and Food Services	64.8	1,687	18.5	10,963
Other Services	95.7	2,984	32.4	10,848
Government and Non NAICS	325.9	4,782	195.2	40,831
Totals	1,899.3	26,439	635.8	24,048

Source: 2003 IMPLAN data from Minnesota IMPLAN Group, Inc.

Table 3.31
Industries Ranked by Total Industrial Output
(Greater than \$30 Million), Five-County Area, Montana, 2003
(in 2005 dollars)

<i>Industry Group</i>		<i>Industry Output (Million \$)</i>
1	Grain Farming	136.700
2	Cattle Ranching and Farming	123.856
3	State and Local Government - Education	108.343
4	Rail Transportation	100.968
5	Owner-Occupied Dwellings	96.021
6	Real Estate	81.419
7	Hospitals	75.739
8	Wholesale Trade	56.131
9	Food Services and Drinking Places	54.703
10	State and Local Government - Non-Education	48.185
11	Federal Government - Non-Military	47.676
12	Monetary Authorities and Depository Credit Institutions	47.402
13	Automotive Repair and Maintenance, Except Car Washes	46.842
14	All Other Crop Farming	43.236
15	Power Generation and Supply	41.644
16	New Residential One-Unit Structures - Nonfarm	40.000
17	Other State and Local Government Enterprises	33.009
18	Oil and Gas Extraction	32.769

Source: 2003 IMPLAN data from Minnesota IMPLAN Group, Inc.

Table 3.32
Industries Ranked by Total Employment
(More than 350 Jobs), Five-County Area, Montana, 2003

<i>Industry</i>		<i>Employment (Jobs)</i>
1	Grain Farming	3,164
2	State and Local Government - Education	2,762
3	Food Services and Drinking Places	1,408
4	Religious Organizations	1,395
5	State and Local Government - Non-Education	1,113
6	Cattle Ranching and Farming	1,063
7	Automotive Repair and Maintenance, Except Car	989
8	Hospitals	814
9	Social Assistance, Except Child Day Care Services	778
10	Wholesale Trade	741
11	Agriculture and Forestry Support Activities	667
12	Federal Government - Non-Military	666
13	Food and Beverage Stores	446
14	Real Estate	405
15	Rail Transportation	402
16	Motor Vehicle and Parts Dealers	362

Source: 2003 IMPLAN data from Minnesota IMPLAN Group, Inc.

Table 3.33 Industries Ranked by Total Employee Compensation plus Proprietary Income (Greater than \$10 Million), Five-County Area, Montana, 2003 (in 2005 dollars)	
<i>Industry</i>	<i>Employee Compensation plus Proprietary Income (Million \$)</i>
1 State and Local Government - Education	98.281
2 Federal Government - Non-Military	47.422
3 State and Local Government - Non-Education	39.888
4 Rail Transportation	34.993
5 Hospitals	32.891
6 Wholesale Trade	23.886
7 Food Services and Drinking Places	14.677
8 Real Estate	12.554
9 Religious Organizations	12.449
10 Agriculture and Forestry Support Activities	12.058
11 Automotive Repair and Maintenance, Except Car	11.907
12 Monetary Authorities and Depository Credit Institutions	11.516
13 Motor Vehicle and Parts Dealers	11.512
14 Gasoline Stations	11.304
15 Food and Beverage Stores	10.910
16 Offices of Physicians, Dentists, and Other Health Professionals	10.904
17 Commercial and Institutional Buildings	10.300

Source: 2003 IMPLAN data from Minnesota IMPLAN Group, Inc.

Table 3.34 Distribution of Nonresident Expenditures by Industry Of Tourists Visiting Russell Country	
<i>Industry</i>	<i>Amount Spent</i>
Gas	25%
Restaurant	20%
Retail	19%
Hotel	16%
Grocery	8%
Auto rental/repair	6%
Fees/license	3%
Outfitter/gear	2%
Camping	1%
Other	1%

Source: Institute for Tourism and Recreation Research, University of Montana, March 2004, *Niche News: Russell Country Travel Region Visitor Characteristics*. Document available for viewing at: <http://www.itrr.umt.edu/>

Table 3.35 IMPLAN Output Multipliers for Selected Industries Five-County Study Area, Montana, 2003	
<i>Industry/Sector</i>	<i>Output Multiplier</i>
Cattle Ranching and Farming	1.8
Oil and Gas Extraction	1.3
Food and Beverage Stores	1.4
Gasoline Stations	1.3
General Merchandise Stores	1.3
Other Amusement, Gambling, and Recreation	1.4
Hotels and Motels, Including Casino Hotels	1.3
Food Services and Drinking Places	1.4
Federal Government – Non-Military	1.4

Source: 2003 IMPLAN data from Minnesota IMPLAN Group, Inc.

Table 3.36 Unemployment Rates for the Five Study Area Counties, Five-County Area, Montana, and the United States, 1995 to 2004 (not seasonally adjusted)								
<i>Year</i>	<i>Blaine</i>	<i>Chouteau</i>	<i>Fergus</i>	<i>Hill</i>	<i>Phillips</i>	<i>Montana</i>	<i>5-County</i>	<i>United States</i>
1995	9.0	3.1	5.7	5.6	5.7	5.4	5.8	5.6
1996	10.4	2.8	5.9	5.0	8.9	5.5	6.1	5.4
1997	10.2	2.4	5.9	5.4	6.8	5.3	5.9	4.9
1998	9.1	3.2	6.4	6.1	8.5	5.6	6.5	4.5
1999	8.5	3.2	5.3	5.9	8.0	5.3	6.0	4.2
2000	5.4	3.6	5.1	4.9	4.4	4.8	4.8	4.0
2001	4.6	3.5	5.1	4.3	4.2	4.5	4.5	4.7
2002	5.0	3.6	4.7	4.2	4.5	4.5	4.4	5.8
2003	4.6	3.3	4.7	4.2	4.4	4.4	4.3	6.0
2004	4.5	3.3	4.9	4.3	4.4	4.3	4.4	5.5

Source: U.S. Department of Labor, Bureau of Labor Statistics, <http://www.bls.gov/lau/home.htm>, accessed October 13, 2006.

Table 3.37 Socioeconomic Summary Selected Local Communities in the Vicinity of the Monument, 2000						
<i>Socioeconomic Indicator</i>	<i>Local Communities</i>					
	<i>Chinook</i>	<i>Big Sandy</i>	<i>Fort Benton</i>	<i>Loma</i>	<i>Lewistown</i>	<i>Winifred</i>
Population	1,386	703	1,594	92	5,813	156
Percentage of White Population	91.30%	95.30%	97.70%	97.80%	96.50%	96.80%
Housing Units	732	371	731	47	2,868	85
Per Capita Income*	\$16,038	\$14,801	\$14,861	\$12,885	\$16,817	\$12,600
Median Household Income*	\$25,461	\$28,523	\$29,406	\$25,208	\$28,949	\$25,000
Total Employment	602	304	665	33	2,676	85

* 1999 data.

Source: U.S. Bureau of Census, 2000.

Table 3.38 Employment in Top Ten Industries (NAICS) Chinook, Blaine County, Montana, 2000			
<i>Top Ten Industries</i>		<i>Employment</i>	
		<i>Number</i>	<i>Percent</i>
1	Educational, Health, and Social Services	143	23.75%
2	Retail Trade	97	16.11%
3	Construction	62	10.30%
4	Public Administration	51	8.47%
5	Finance, Insurance, Real Estate, Rental, and Leasing	50	8.31%
6	Arts, Entertainment, Recreation, Accommodation, and Food Services	48	7.97%
7	Agriculture, Forestry, Fishing, Hunting, and Mining	48	7.97%
8	Transportation, Warehousing, and Utilities	35	5.81%
9	Professional, Scientific, Management, Administrative, and Waste Management Services	24	3.99%
10	Other Services, Except Public Administration	21	3.49%
Total of Top Ten		579	96.18%

Source: U.S. Bureau of Census, 2000.

Table 3.39 Employment in Top Ten Industries (NAICS) Big Sandy, Chouteau County, Montana, 2000			
<i>Top Ten Industries</i>		<i>Employment</i>	
		<i>Number</i>	<i>Percent</i>
1	Educational, Health, and Social Services	101	33.22%
2	Agriculture, Forestry, Fishing, Hunting, and Mining	47	15.46%
3	Arts, Entertainment, Recreation, Accommodation, and Food Services	31	10.20%
4	Retail Trade	27	8.88%
5	Other Services, Except Public Administration	23	7.57%
6	Construction	19	6.25%
7	Public Administration	13	4.28%
8	Transportation, Warehousing, and Utilities	11	3.62%
9	Finance, Insurance, Real Estate, Rental, and Leasing	9	2.96%
10	Information	7	2.30%
Total of Top Ten		288	94.74%

Source: U.S. Bureau of Census, 2000.

Table 3.40
Employment in Top Ten Industries (NAICS)
Fort Benton, Chouteau County, Montana, 2000

<i>Top Ten Industries</i>		<i>Employment</i>	
		<i>Number</i>	<i>Percent</i>
1	Educational, Health, and Social Services	158	23.76%
2	Retail Trade	101	15.19%
3	Agriculture, Forestry, Fishing, Hunting, and Mining	73	10.98%
4	Public Administration	66	9.92%
5	Finance, Insurance, Real Estate, Rental, and Leasing	54	8.12%
6	Construction	47	7.07%
7	Arts, Entertainment, Recreation, Accommodation, and Food Services	46	6.92%
8	Manufacturing	41	6.17%
9	Other Services, Except Public Administration	27	4.06%
10	Professional, Scientific, Management, Administrative, and Waste Management Services	18	2.71%
Total of Top Ten		631	94.89%

Source: U.S. Bureau of Census, 2000.

Table 3.41
Employment in Top Ten Industries (NAICS)
Loma, Chouteau County, Montana, 2000

<i>Top Ten Industries</i>		<i>Employment</i>	
		<i>Number</i>	<i>Percent</i>
1	Manufacturing	7	21.21%
2	Educational, Health, and Social Services	6	18.18%
3	Arts, Entertainment, Recreation, Accommodation, and Food Services	5	15.15%
4	Transportation, Warehousing, and Utilities	4	12.12%
5	Construction	4	12.12%
6	Retail Trade	3	9.09%
7	Professional, Scientific, Management, Administrative, and Waste Management Services	2	6.06%
8	Agriculture, Forestry, Fishing, Hunting, and Mining	2	6.06%
9	Public Administration	0	0.00%
10	Other Services, Except Public Administration	0	0.00%
Total of Top Ten		33	100.00%

Source: U.S. Bureau of Census, 2000.

Table 3.42 Employment in Top Ten Industries (NAICS) Lewistown, Fergus County, Montana, 2000			
<i>Top Ten Industries</i>		<i>Employment</i>	
		<i>Number</i>	<i>Percent</i>
1	Educational, Health, and Social Services	643	24.03%
2	Retail Trade	392	14.65%
3	Arts, Entertainment, Recreation, Accommodation, and Food Services	279	10.43%
4	Construction	257	9.60%
5	Other Services, Except Public Administration	224	8.37%
6	Manufacturing	158	5.90%
7	Public Administration	154	5.75%
8	Finance, Insurance, Real Estate, Rental, and Leasing	130	4.86%
9	Transportation, Warehousing, and Utilities	104	3.89%
10	Information	92	3.44%
Total of Top Ten		2,433	90.92%

Source: U.S. Bureau of Census, 2000.

Table 3.43 Employment in Top Ten Industries (NAICS) Winifred, Fergus County, Montana, 2000			
<i>Top Ten Industries</i>		<i>Employment</i>	
		<i>Number</i>	<i>Percent</i>
1	Educational, Health, and Social Services	22	25.88%
2	Agriculture, Forestry, Fishing, Hunting, and Mining	18	21.18%
3	Arts, Entertainment, Recreation, Accommodation, and Food Services	17	20.00%
4	Transportation, Warehousing, and Utilities	9	10.59%
5	Construction	8	9.41%
6	Other Services, Except Public Administration	5	5.88%
7	Retail Trade	4	4.71%
8	Wholesale Trade	2	2.35%
9	Public Administration	0	0.00%
10	Professional, Scientific, Management, Administrative, and Waste Management Services	0	0.00%
Total of Top Ten		85	100.00%

Source: U.S. Bureau of Census, 2000

Table 3.44 Revenues to Counties in Five-County Area, Fiscal Year 2004-2005 (Rounded to nearest \$1,000)			
<i>County</i>	<i>Non Tax Revenues</i>	<i>Property Tax Revenues</i>	<i>Total Revenues</i>
Blaine	\$9,611,000	\$1,848,000	\$11,459,000
Chouteau	\$6,111,000	\$2,483,000	\$8,594,000
Fergus	\$4,466,000	\$2,357,000	\$6,823,000
Hill	\$10,588,000	\$3,765,000	\$14,353,000
Phillips	\$5,546,000	\$1,046,000	\$6,592,000

Source: Personal Communication with Local Government Center at Montana State University.

Table 3.45 Total Property Tax Levies and Vehicle Revenues in Five-County Area, 2005 (Rounded to nearest \$1,000)	
<i>County</i>	<i>Total Property Taxes</i>
Blaine	\$6,535,000
Chouteau	\$9,355,000
Fergus	\$11,825,000
Hill	\$16,649,000
Phillips	\$7,008,000
Total	\$51,372,000

Source: Montana Department of Revenue, Biennial Report July 1, 2004 to June 30, 2006.

Table 3.46 Annual School Revenues by County, 2004-2005						
<i>Revenue Source</i>	<i>Blaine</i>	<i>Chouteau</i>	<i>Fergus</i>	<i>Hill</i>	<i>Phillips</i>	<i>Proportion</i>
Property Tax	\$1,352,000	\$3,083,000	\$4,502,000	\$4,731,000	\$2,395,000	19%
Non Levy	\$1,578,000	\$904,000	\$1,512,000	\$3,418,000	\$2,414,000	12%
County	\$1,305,000	\$745,000	\$1,427,000	\$2,578,000	\$949,000	8%
State	\$5,926,000	\$2,813,000	\$7,524,000	\$11,065,000	\$3,905,000	37%
Federal	\$6,443,000	\$548,000	\$1,270,000	\$10,564,000	\$1,261,000	24%
Total	\$16,604,000	\$8,093,000	\$16,235,000	\$32,356,000	\$10,924,000	100%

Source: Montana Office of Public Instruction, Trustees Financial Summaries 2004-2005.

Table 3.47 2006 Special Recreation Permits Issued for the Monument	
<i>Outfitting and Vending Services</i>	<i>BLM-Authorized Outfitters and Vendors</i>
Commercial River	21 (16 moratorium, 5 one-time)
Upland Hunting	12
Upland Tours	2
Vending Services	1
Total	36

Table 3.48
Annual PILT Payments by County, 2003-2006

<i>County</i>	<i>BLM Acres</i>	<i>Total PILT Acres</i>	<i>PILT Payment</i>	<i>BLM PILT Payment</i>	<i>Payment/Acre</i>
Blaine					
2003	451,385	452,199	\$356,195	\$355,554	\$0.79
2004	451,077	451,891	\$472,885	\$472,033	\$1.05
2005	451,077	451,891	\$391,394	\$390,689	\$0.87
2006	451,077	451,891	\$332,555	\$331,956	\$0.74
Chouteau					
2003	109,408	155,983	\$205,380	\$144,056	\$1.32
2004	109,130	155,705	\$193,330	\$135,500	\$1.24
2005	109,171	155,746	\$200,794	\$140,748	\$1.29
2006	109,171	155,746	\$191,383	\$134,151	\$1.23
Fergus					
2003	345,371	489,533	\$637,201	\$453,811	\$1.31
2004	344,228	483,796	\$652,162	\$464,023	\$1.35
2005	344,228	483,796	\$666,931	\$474,531	\$1.38
2006	344,228	483,796	\$676,413	\$481,278	\$1.40
Hill					
2003	14,132	47,718	\$64,506	\$19,104	\$1.35
2004	14,132	47,718	\$52,631	\$15,587	\$1.10
2005	14,132	47,718	\$52,370	\$15,510	\$1.10
2006	14,132	47,718	\$23,444	\$6,943	\$0.49
Phillips					
2003	1,077,715	1,377,093	\$261,231	\$20,4440	\$0.19
2004	1,077,715	1,377,093	\$232,000	\$181,564	\$0.17
2005	1,077,715	1,377,093	\$272,491	\$213,252	\$0.20
2006	1,077,715	1,377,099	\$278,672	\$218,088	\$0.20
Five-County Area, MT					
2003	1,998,011	2,517,932	\$1,524,513	\$1,176,965	\$0.59
2004	1,996,282	2,516,203	\$1,603,008	\$1,268,707	\$0.64
2005	1,996,323	2,516,244	\$1,583,980	\$1,234,729	\$0.63
2006	1,996,323	2,516,250	\$1,502,467	\$1,172,416	\$0.60

Source: U.S. Department of the Interior, National Business Center website, *Payments in lieu of taxes, County payments and acres*. Website available for viewing at: <http://www.nbc.gov/pilt/search.cfm>.

Table 3.49 Federal Royalty Disbursements for Natural Gas, Oil, and Coal Produced in Study Area Counties 2004-2006				
<i>County</i>	<i>Year</i>	<i>Royalty Value (\$1,000s)</i>	<i>Disbursement to State (\$1,000s)</i>	<i>Distribution to County (\$1,000's)</i>
Blaine	2004	\$1,197.0	\$598.5	\$149.6
	2005	\$1,726.2	\$863.1	\$215.8
	2006	\$1,677.8	\$838.9	\$209.7
Chouteau	2004	\$340.7	\$170.4	\$42.6
	2005	\$320.9	\$160.5	\$40.1
	2006	\$311.4	\$155.7	\$38.9
Fergus	2004	\$38.8	\$19.4	\$4.9
	2005	\$17.0	\$8.5	\$2.1
	2006	\$104.2	\$52.1	\$13.0
Hill	2004	\$1,197.0	\$598.5	\$149.6
	2005	\$537.1	\$268.6	\$67.1
	2006	\$521.0	\$260.5	\$65.1
Phillips	2004	\$5,970.7	\$2,985.4	\$746.3
	2005	\$6,613.5	\$3,306.8	\$826.7
	2006	\$9,249.7	\$4,624.8	\$1,156.2

Source: Personal communication with Van Charleton, Montana Department of Revenue, in October 2006 and March 2007. Note that in FY 2004, only 12.5% of royalty revenues to the state were disbursed to Counties, while in FY 2005 and FY 2006 25% of royalty revenues to the state were disbursed to the Counties.

Table 3.50 Gas Tax Road Revenues by County, FY 2005			
<i>County</i>	<i>Dollars/mile</i>	<i>Gas Tax Road Miles</i>	<i>Gas Tax Road Revenues</i>
Blaine	\$11.53	1,565	\$18,049
Chouteau	\$14.52	2,400	\$34,843
Fergus	\$11.75	1,658	\$19,477
Hill*	\$12.46	1,797	\$22,389
Phillips	\$12.27	1,513	\$18,572

Source: Personal communication with Jim O'Hara, Chouteau County Commissioner, on October 18, 2006.

Personal communication with Carl Sielstad, Fergus County Commissioner, on October 19, 2006.

Personal communication with Richard Dunbar, Phillips County Commissioner, on October 18, 2006.

Personal communication with Don Swenson, Blaine County Commissioner, on October 16, 2006.

*Attempts to contact a Hill County Commissioner were unsuccessful. The data for Hill County is from FY 2003 based on personal communication with Hill County Road Supervisor, Jerry Otto, December 4, 2003.

Table 3.51 Distribution of Grazing Fee Revenues to US and Counties, FY 2006		
<i>County</i>	<i>Grazing Fee Receipts to US</i>	<i>Grazing Fee Receipts to State/Counties</i>
Blaine	\$97,858	\$19,106
Chouteau	\$14,929	\$10,872
Fergus	\$90,600	\$16,355
Hill	\$2,801	\$1,400
Phillips	\$237,762	\$37,478
Five-County Area, MT	\$443,950	\$85,211

Source: Personal communication with William Volk, Rangeland Ecologist, Bureau of Land Management, Montana State Office, on October 31, 2006.

